July · 1951
finish
Metal Products Manufacturing
FROM RAW METAL TO FINISHED PRODUCT

no shortage.....in the quality

Each step in the manufacture of "Ceramic" Colors and Chemicals is guarded in this control laboratory.

you get from "Ceramic"

One of "Ceramic's" complete chemical units, each capable of producing large quantities of material.

WHATEVER shortages exist or may arise, there will be no shortage in "Ceramic" Quality. The same rigid controls as in normal times are being employed in our chemical laboratory. Test batches are fired under production conditions that duplicate your own. You can put full confidence in "Ceramic" colors and chemicals, for true-to-sample matching, for trouble-free workability.

Every effort is being made to supply the needs of those who have depended on us in the past. "Ceramic" is actively engaged in testing and processing available material for conversion into usable products. If you have a problem which our experience and specialized laboratory and testing equipment can help solve, you can count with confidence on our full cooperation.

WENNING CERAMIC COLORS TRADE MARK

CERAMIC COLOR & CHEMICAL MFG. CO.
New Brighton, Pa., U.S.A.

There is something you can do about your "finish"! Never in the past decade has research been so productive of improvements in the field of **PORCELAIN ENAMELING**! That which "yesterday" generally conceded to be impractical is today a matter of common useage. It is definitely to the point that this is a World of Change. . . . so we repeat "Do you really know the potentials of **MODERN PORCELAIN ENAMELS**"? Have you seen the "newer whites"—their greater scratch resistance — their better coverage — their economy—their workability? If you're not absolutely sure that you are familiar, yes thoroughly familiar with these **NEW** and **MODERN FINISHES** it will be to your advantage to talk with **PEMCO**. We'll gladly discuss your finishing problems and cooperate with you for a satisfactory solution. Your request in today's mail—or a wire or phone call will get immediate attention.

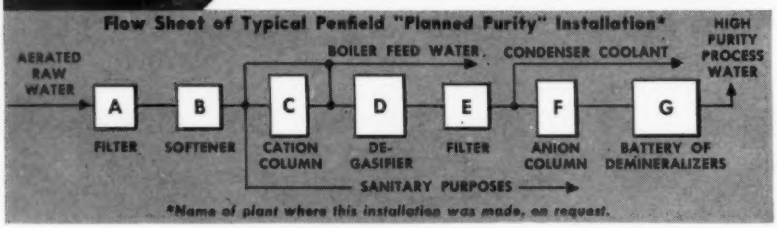
CORPORATION

Baltimore 24, Maryland

Always Begin With a Good Finish

✓ "Slip" Always Right
✓ Rejects Decreased
✓ Costs Lowered
✓ Production Increased

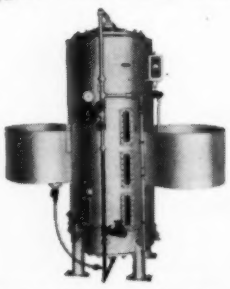
with "PLANNED PURITY" WATER



Problem Assigned Penfield: Raw well water of 347 PPM total hardness (calculated as $CaCo_3$) and 187 PPM alkalinity, methyl orange, as well as considerable hydrogen sulphides, needs to be conditioned for use as follows: 1300 gph for boiler feed water and sanitary purposes; 100 gph for use as make-up water for a condenser coolant; and 2500 gph for a process requiring exceptionally high purity water.

"Planned Purity" Solution: Aerated raw water is passed through Sand Filter (A) to remove colloidal sulphur (precipitated by aeration), then through Softener (B), at which point water of satisfactory softness for sanitary purposes is drawn off. Approximately 3000 gph of softened water passes on to large Cation Column (C) where the cations are removed and the 187 PPM of alkalinity are converted to carbonic acid which can be blown from the water into the Degasifier (D) as carbon dioxide. The degasified water then is pumped through the Sand Filter (E) and on to the Anion Column (F). However, provisions are made (1) for combining water taken from the large Cation Column with equal parts of water taken from the Softener to make an ideal blend for boiler feed use; and (2) for drawing off 100 gph of water demineralized down to approx. 20 PPM total solids, which with small additions of caustic soda is ideal for use as make-up water for a condenser coolant. The remaining water passing through this multiple-use conditioning system goes on to a battery of Demineralizing Units (G) which deliver approximately 2500 gph of the exceptionally high purity water (conductivity of 1,000,000 ohms) required in the plant's process.

NEW! **Mono-Bed Unit**



The Penfield Mono-Bed Demineralizer shown above operates upon the most efficient and effective deionizing technique known — the intimate mixing in a single container of cation and exceptionally strong anion base exchangers. In comparison to distilled water costs, Penfield Industrial Demineralizers provide savings as high as 85% and in one reported instance cut costs 98%. Send for "Penfield Pays" folio giving specifications of all Penfield Demineralizing Units — from 10 gals/hr. to 10,000 gals/hr.

LET PENFIELD ENGINEERS MAKE A "PLANNED PURITY" SURVEY OF YOUR PLANT

As in the typical "Planned Purity" installation described above, by *planning* water-treating methods specifically for the various standards of purity and quantities required, Penfield engineers often are able to suggest a *multiple-use* conditioning system which, while holding equipment investments to a minimum, makes important contributions *both* to reduced plant operating costs *and* to improved process or end product results.

Write today describing your water conditioning needs.

PENFIELD
MANUFACTURING CO., INC.
19 High School Ave., Meriden, Conn.
FILTERS · SOFTENERS · DEGASIFIERS · DEMINERALIZERS

Penfield "Planned Purity" PAYS!

MEETINGS

HEATING, VENTILATING ENGRS. SEMI-ANNUAL MEETING

The semi-annual meeting of the American Society of Heating and Ventilating Engineers will be held July 2-4, in Portland, Oregon.

PLATING MEN TO MEET IN BUFFALO, JULY 30

The 38th annual convention of the American Electroplaters' Society will be held in Buffalo, N. Y., July 30, 31, August 1 and 2. Convention headquarters will be at the Hotel Statler.

NATIONAL METAL TRADES ASSN.

The National Metal Trades Association will meet September 26-28 at the Palmer House, Chicago, Ill.

ENAMELERS SHOP PRACTICES FORUM, OCTOBER 10-12

The annual shop practices forum of the Porcelain Enamel Institute will be held this year at Ohio State University, Columbus, Ohio, October 10, 11 and 12.

ANNUAL METAL SHOW, OCT. 15-19

The 33rd annual national metal congress and concurrent national metal exposition will be held in Detroit, October 15 through 19.

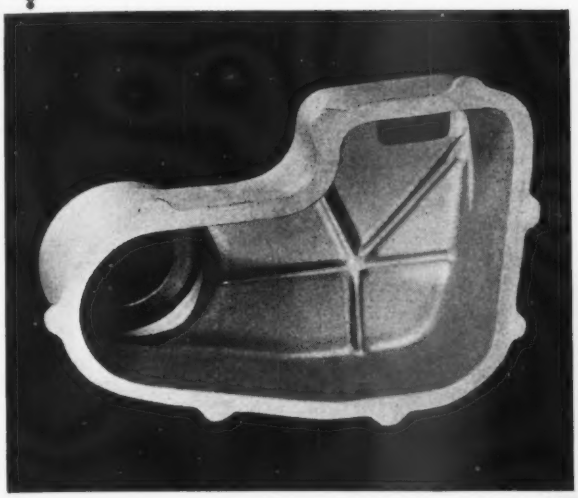
AGA CONVENTION IN ST. LOUIS

The 33rd annual convention of the American Gas Association will be held in St. Louis, Missouri, October 15, 16 and 17.

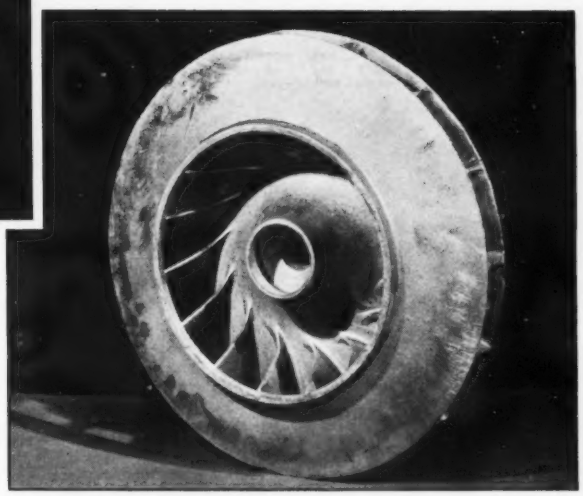
PAINT INDUSTRIES MEETINGS OCTOBER 29 TO NOVEMBER 3

The annual convention of the National Paint, Varnish and Lacquer Association will be held in Atlantic City, October 29-31, and immediately following will be the annual convention of the Federation of Paint and Varnish Production Clubs, November 1-3.

FOR PEACE



OR DEFENSE



ACME

has the experience

FROM a single source you can get aluminum alloy permanent mold and semi-permanent mold castings, plus aluminum and magnesium alloy sand castings.

During World War II Acme produced a wide variety of castings for aircraft and aircraft accessories and for numerous complicated ordnance parts. Production on some of these parts has never been discontinued.

This experience and our engineering knowledge is available to you. Acme engineers will work with you on problems of design, cost of producing samples, production costs and cost of patterns or permanent molds to produce high quality castings.

A COMPLETE LIGHT METAL CASTINGS SERVICE

ACME

ALUMINUM FOUNDRY CO.

6843 SOUTH BELL AVENUE

CHICAGO 36, ILLINOIS

TELEPHONE — PROSPECT 6-5035

Perm-Cote

can replace
ZINC or CADMIUM
in many
rust-proofing applications

NEW! Your products are given a permanent rust-proof layer. Perm-Cote converts any steel or iron surface to a dense, non-metallic phosphate coat. The corrosion resistant qualities of the absorbent coating are multiplied by impregnation with a special oil that leaves the products dry to the touch.

GOV'T SPECS: Oil-impregnated parts show a salt spray resistance far exceeding the 36-hour test required by Army Specification 57-0-2c, Type II, Class B. The corrosion resistance of the phosphate coating itself is demonstrated by the fact that non-oiled parts have a salt spray resistance of 12 hours.

PROOF! You can supply the best proof! Send samples of your production work for Perm-Coting. Your inspection and tests when the samples are returned will tell you the whole story. Upon request, you can have the findings of both the government and private industry proving the superior rust-proofing achieved by Perm-Cote.

APPLICATIONS! Armament (rockets, mortar shells, machine gun links, gun barrels, other ordnance parts); metal fasteners (nuts, bolts, washers, screws); springs; hardware (hinges, hand tools, casters); appliances; sheet metal parts, and many others.

INVESTIGATE!

- ☐ Write for descriptive literature.
- ☐ Send samples of your work to be coated.
- ☐ Request a Detrex Field Engineer to call.

106A

DETREX
BOX 501, DETROIT 32, MICH. Corporation

From the Editor's mail..

Message from Breda

Dear Sirs:

On page 31 in the "Finish" magazine of April 1951 issue, we find an illustration and short description pertaining to a new conveyor, and as we feel very much interested in this conveyor, we would like to get in touch with the manufacturer of same. Therefore, we shall be glad to receive from you the exact address of the makers.

As we are subscribers to the above-mentioned magazine, we assume that you will comply with our request.

Directeur
N. V. Uzergieteruen en
Emailleerfabrieken
De Etna
Breda, The Netherlands

the request was handled promptly

Pre-shipment testing helps reduce losses, improve customer relations

Gentlemen:

We would like to advise you that we have followed the publications of the NST Committee with a lot of interest. Pre-testing our products and the cooperation of all forms of carriers has resulted in reduced losses and improved customer relations.

The Railway Companies and the Highway Transport operators in Canada know that we are pre-testing our products, but we have not yet applied for certification as we manufacture a variety of merchandise and our tests are not yet fully completed.

Pre-testing has proved very beneficial and has ont only resulted in improved packaging but also in improved construction of some articles. We manufacture a full line of stoves (including electric, gas, oil, coal and wood), furnaces, electric refrigerators, kitchen cabinets, range boilers and all types of cooking utensils including enamelled aluminum, tin, black iron and stainless steel.

J. B. Coulson
General Traffic Manager
General Steel Wares, Ltd.
Toronto, Canada

Camera: Stand. Rolleiflex, 3.8 Tessar, Yellow G Filter
Film: Plus X — 1/100 sec. at f/8

"Full Sails" by W. E. Lindner, Toledo Scale Co.

TEN DOLLARS will be paid for black on white 8x10 enlargement chosen for this page. Sports subjects or plant operations given preference.

SODIUM ANTIMONATE

For Uniformity in Enamel Finishes

From day to day, from lot to lot, it's easy to reproduce identical results in enamel finishes when M & T Sodium Antimonate is the opacifier.

Rigid chemical control of the continuous process by which M & T Sodium Antimonate is made assures uniformity of your desired color in the frit, along with maximum opacity, high lustre and required acid resistance. And, M & T quality control includes final testing of every lot of Sodium Antimonate in a typical dry process enamel as a check for conformity in color, reflectance, opacity, lustre and working quality.

M & T Sodium Antimonate is used throughout the sanitary ware industry for both regular and acid resisting dry process cast iron enamels and for sheet steel frits.

Call on M & T — for assistance with your enamel problems.

★ *Headquarters for Opacifiers* ★

METAL & THERMIT CORPORATION

CERAMIC DIVISION

100 EAST 42ND STREET NEW YORK 17, N. Y.

Fabrication and finishing at Perfection Stove

this company's Ivanhoe Road plant is housed in one of the most modern buildings of its kind

by Walter Rudolph

Exclusive feature finish

Perfection Stove Company, Cleveland, Ohio, already a national leader in its field of producing gas, electric and kerosene ranges, and gas and oil furnaces, and home heaters, last year reached volume production in its new Ivanhoe Road plant. Admittedly one of the most modern buildings of its kind and part of a multi-million dollar expansion program, the plant includes a compact, efficient porcelain enameling department that regularly finishes some 52,000 square feet of ware in two nine-hour shifts daily.

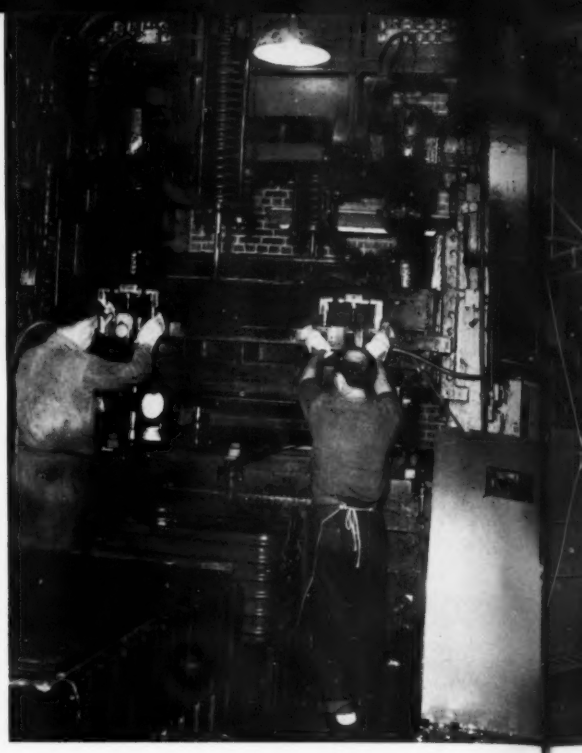
Although this article deals primarily with this finishing procedure, we might note other facilities in the modern plant. Most of the press work is done in a huge bay, 110 x 855 feet, with a 60-foot ceiling, reputedly large enough to house, comfortably, a dozen B-29 bombers. Overhead in this bay is a 20-ton, four-motor traveling crane that boasts the longest bridge of any inside crane in greater Cleveland, efficiently serving the presses, large and small. The crane weighs 115,000 pounds, and its runway extends the entire 855-foot building length.

Drawing compounds and lubricants compatible with cleaning materials

Perfection exercises very careful control over all compounds and lubricants used in press work, especially in connection with deep draws or forming; the quality control program is aimed at making these compounds and lubricants compatible with the various solutions used in cleaning and pickling of ware.

For instance, some dry coating is done on cold rolled and enameling stock that undergoes deep drawing. The process is carefully controlled in a series of tanks at one end of the finishing department, adjacent to the press bay. Various compounds are experimented with, striving for the ultimate in dry-coating; one such

The plant boasts a huge press bay. This press is producing base stiffener pieces. Two dies perform several operations to produce a finished piece with each press stroke.



product is a compound, mixed about 12 ounces to a gallon of water, with dipping done at 190° to 210°F.

Press-worked pieces in general come to the enameling department in tote boxes and racks hauled by fork trucks. They are hung on a conveyor that enters an automatic washing and pickling machine 110 feet long. All equipment in, and parts of the machine itself exposed to the liquids, are fabricated of Monel or stainless steel.

This conveyor travels about 4½ feet per minute, hitting first a sprayed emulsion cleaning bath at 165°F; secondly, a cold water rinse. Third step is an alkali bath at 185°F., and then into a three-stage rinse spray.

In this three-stage rinsing, which step is used several times, the water which is sprayed in the last stage of the three is re-circulated through the second and first rinsing stages, effecting economy while doing an excellent job. From the rinse, ware goes into a rubber-lined section, with Saran risers, and is sprayed with sulphuric acid at 155°F.

Another three-stage rinse follows, and then a nickle spray bath, 170°F., coating about 0.015 to 0.025 to help adherence quality of the ware. Next to last step is a mild cyanide spray at 130°F., and, finally, a soda ash and borax neutralizer bath at 130°F. before entrance to the forced drying section of the machine, at 250°F.

Parts are balanced for assembly requirements

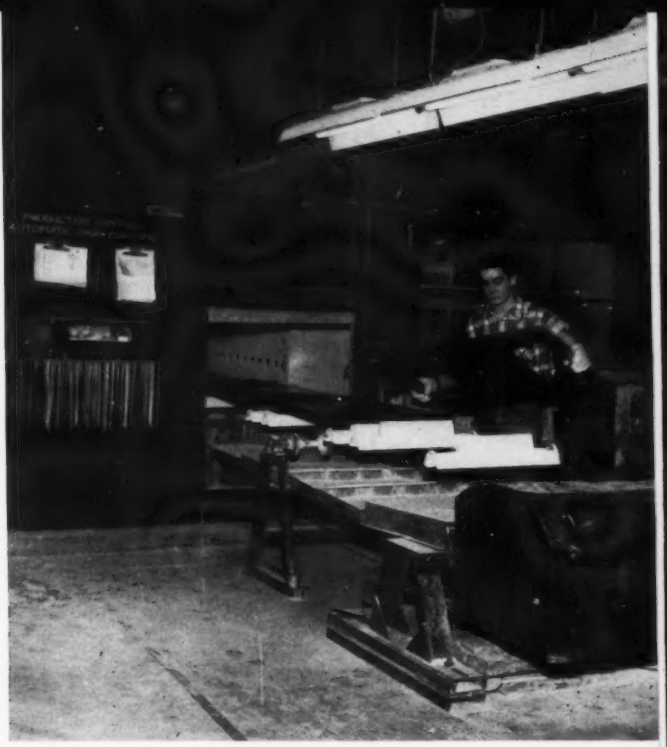
Job lots of ware are carefully controlled to tie in with the immediate needs of the assembly floor. As much of the ware as possible is routed through dipping, most of which is done at an 8 x 4-foot tank holding nearly 2,000 pounds of wet enamel (ground coat), which is constantly re-circulated, screened and passed through a magnetic separator.

Several men will work at dipping simultaneously at this large tank, and another at a smaller tank for special

Top left: Two operators perform piercing, trimming and redrawing on range oven and broiler doors, each stroke of the press producing a finished unit.

Top right: At right of this large toggle press (one of several in area adjacent to large press room), the front panel of a range, shown right, has window opening blanked and 9 small holes pierced with template die.

Left: Here is shown the entrance to the automatic cleaning and pickling machine at Ivanhoe Rd. plant.



or odd-shaped parts. The conveyor for this phase of the work travels about 48 feet per minute. Ware goes through a forced air dryer, at from 375° to 400°F., and while hot after leaving the dryer, is inspected for possible reinforcing, by spraying, which in turn dries in about 15 seconds.

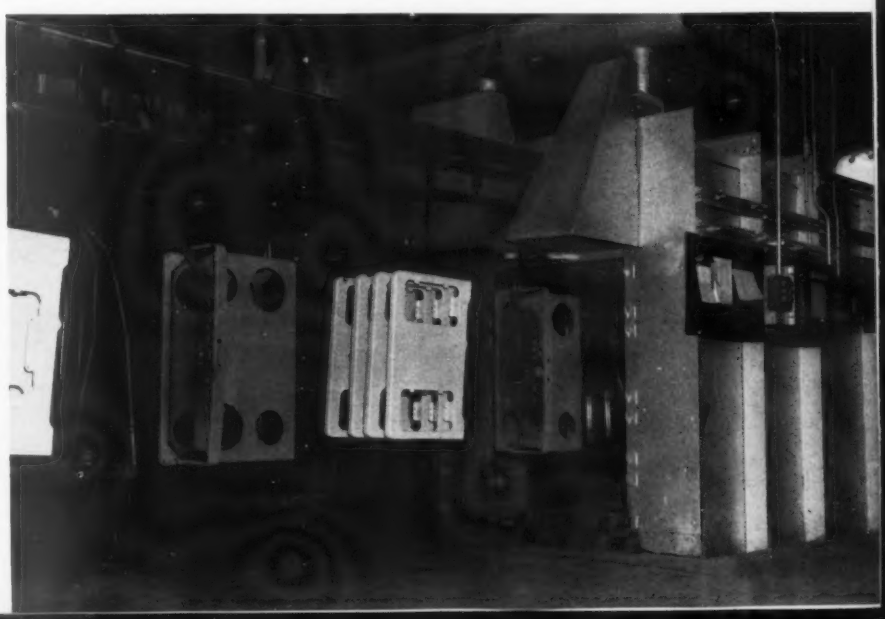
Enamel weights are checked every half hour, recorded, and experience gives the workers good control over the quality of coatings all through the department. Dried and inspected ware is transferred to the "burning chain", to enter a continuous, U-type furnace, at from 1450° to 1480°F., traveling from 10 to 11½ feet a minute. Both ground and finish coat ware use this same furnace. It has a firing chamber of approximately 36 feet, providing about three and a half minutes actual firing time. Ware is in the furnace about 20 minutes, total time.

Pressurized room for both manual and automatic spraying

Depending upon the piece shape, weight and size, some inspected ground coat ware goes to an automatic spray setup, core of which is a pressurized room; all air entering here, through 96 filter units, is near perfect for coating work. Loading is done just outside the room. Manual and automatic spraying, both, are done inside the room, depending upon circumstances.

Automatic spraying is done with a reciprocating, four-nozzle gun arrangement, with spray area enclosed around the conveyor, about waist high, traveling horizontally. At the exit end of the automatic spraying section of the pressurized tunnel, edge spraying can be done manually; ware continues about 50 feet through a lay-down type drier at 120°F.

From the latter, ware goes through brushing and is ready for the "burning chain", through a transfer operation. Perfection also has a 32-foot spray booth for all parts too unwieldy to dip. Drying is done at from 375°



Top left: At exit end of machine just noted, this close-up shows fabrication details of several of conveyor racks used in traveling ware through pickling operations.

Top right: Automatic spraying tunnel, entrance end, is shown here, with ware being placed for finish enameling on horizontal conveyor.

Right: This view shows both the entrance and exit end of the U-type burning furnace loaded with range tops. Note air seals.

Left: Ware being removed from conveyor in brushing dept. for transfer to continuous "burning chain."

to 400°F., and then black-edging or reinforcing, as required. Checks are continuously being made on bisque coating, before transfer to the continuous furnace chain.

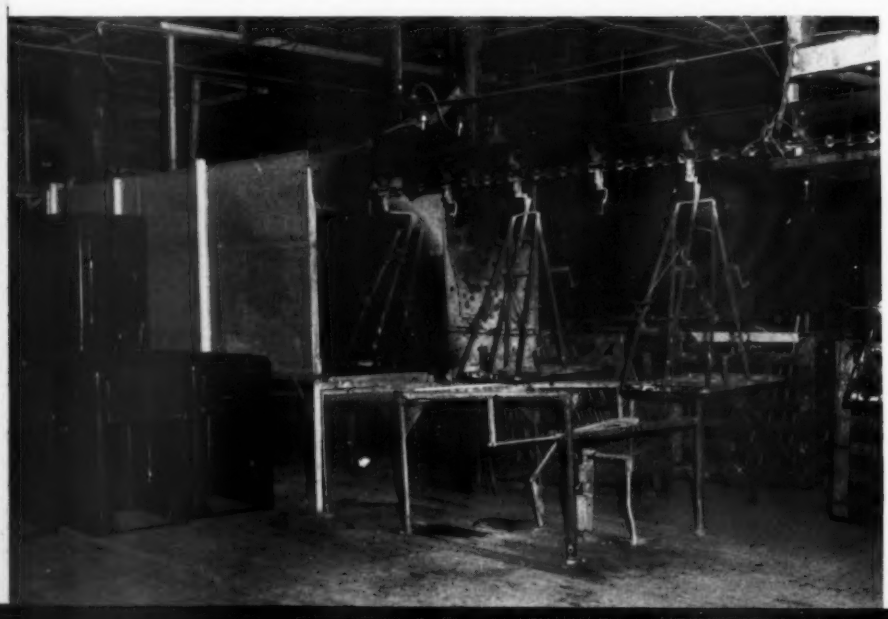
After suitable cooling travel, ware comes up to final inspection and sorting into special wooden boxes or stock racks that will be taken to appropriate assembly line areas by fork truck. Should a finished piece not stand up to Perfection's quality inspection, it is left on the finish conveyor and travels a short distance to a "repair booth", and is hung to go back to the continuous furnace.

Perfection manufactures its own enamel, purchasing only raw chemicals for processing, batching, and finally milling and mixing.

Automatic cleaning tunnel for conveyor wheels and racks combines dry and wet cleaning

An ingenious cleaning tunnel, where conveyor racks that travel through dipping stations and spray booths can be readily cleaned, is worth noting. As the conveyor approaches the tunnel, it trips a limit switch along the top of the monorail. This switch actuates solenoid valves and air discharging (about 30 pounds pressure), at a point just before the conveyor enters the rack wash; any dust or foreign matter is thus blown off the trolley wheels of the conveyor, and the danger of such matter dropping on wet enamel is eliminated.

The rack wash booth, or tunnel, is about 15 x 3 x 5 feet, and a special pump sprays water at about 70 to 75 pounds pressure against the dirty conveyor racks. A series of drip pans, at the exit end of the wash tunnel, take the enamel out of the water before it is re-circulated in the cleaning process.



Left center: An ingenious edge-brushing operation. Ware is located on spinner and operator holds brush to strip while the piece revolves.

Left: Wash booth for cleaning conveyor racks of accumulated enamel. Operation is described above.

HD-N

Cuts Cleaning Time

Cowles HD-N Cleaner, the *new* heavy-duty soak cleaner for ferrous metals, will often do in 10 minutes what it takes other cleaners 30 minutes or more to do. It is specifically formulated as a straight or barrel soak for precleaning before plating, enameling, pickling, painting, back-shop reconditioning—or anywhere a heavy-duty cleaner is needed to remove stubborn types of soil.

The latest developments in metal cleaning research have been incorporated in HD-N to assure maximum detergency under all conditions of usage.

HD-N may also be used on such active metals as brass and zinc, if some attack is acceptable.

HD-N penetrates and removes such soils as oil, carbon, grease, drawing compound, graphite, road and shop dirt in *one* cleaning operation. It is fast, thorough, and does a complete job . . . is readily and completely soluble in hot water.

COWLES CHEMICAL COMPANY
Metal Cleaner Department
7016 Euclid Avenue • Cleveland 3, Ohio

This booklet will be sent by filling in coupon.

Cowles Chemical Company
7016 Euclid Avenue
Cleveland 3, Ohio

Please send me booklet, "HEAVY DUTY CLEANING THE FAST WAY."

Name_____

Company_____

Address_____

City_____ Zone____ State_____

There's a NAGEL-CHASE CASTER FOR *EVERY* APPLIANCE

PRECISION-BUILT FOR LONG, HARD SERVICE

▲ 2109-11

1⅝" Pintle Type Caster with hard rubber composition wheel.

B2614-62P ➤

2½" Swivel Type Caster with strong plastic wheel.

FOR more than a quarter century Nagel-Chase has specialized in the design and manufacture of casters for the leading washing machine and appliance manufacturers.

Built in a wide range of sizes and types from 1⅝" to 3", and with strong plastic, hard or soft tread rubber composition wheels, Nagel-Chase standard casters will suit the needs of virtually any appliance built today.

Consult Nagel-Chase on your caster requirements. Complete information is always available on request.

◄ 2114-62PH

2½" Pintle Type Caster with plastic wheel and cam brake.

NAGEL-CHASE V-BELT PULLEYS FOR BELT-DRIVEN APPLIANCES

ONE of the leading manufacturers of V-Belt Pulleys, Nagel-Chase is equipped to furnish fractional horse-power pulleys that are ideally suited to both wringer and automatic type belt-driven washing machines and dryers.

Nagel-Chase Pulleys are made from spot-welded pressed steel, with rolled or flanged edges and equipped with "milled-from-the-bar" hubs that cannot turn in the pulley because they are made with a flat side that fits in a D-shaped hole in the pulley.

For economy and trouble free service, specify Nagel-Chase Pulleys for all your belt-driven appliances. Complete information gladly supplied on request.

2121-14P ➤

2" Pintle Type Caster with Hooded Fork and durable plastic wheel.

◄ 21-58BB-14P

2" Pintle Type Ball Bearing Caster with strong plastic wheel.

THE NAGEL-CHASE MANUFACTURING COMPANY
2811 N. Ashland Avenue, Chicago 13, Ill.
SPECIALISTS IN CASTERS AND PULLEYS FOR NEARLY A QUARTER CENTURY!

Flow coating cabinets and components for dishwashers

the story of how Hotpoint covers 28,000 square feet of metal surface area in 16 hours with 12 gallons of prime coat at the Milwaukee dishwasher plant

by Arnold Carlsen • GENERAL FOREMAN, HOTPOINT, INC., MILWAUKEE, WIS., AS TOLD TO *Dana Chase*

Exclusive feature finish

Yes, we have found the flow coating system quite satisfactory for applying prime coat to our steel dishwasher cabinets, aluminum inner door assemblies, cabinet door assemblies, and the frame assembly, for a complete dishwasher line manufactured at Milwaukee.

We went into the new program quite slowly, as we were frankly skeptical because of earlier experience with the process during the war. At that time, we had difficulty with settling, "jelling," and other problems which seemed to be inherent in the process as employed earlier. When the system was again suggested, for civilian production, we were lukewarm, to say the least. Our experience since that time, however, has more than warranted our re-trial of the system with present-day materials and modern equipment.

Dipping not feasible

The present design of our dishwasher cabinets prevents a successful dipping operation, as the fabricated cabinet has a closed top. One size of cabinet is 27″ in width, while the combination dishwasher and sink has a 48″ cabinet.

One small drain-hole is all that is required for satisfactory draining in the vapor-laden atmosphere employed in our present system of flow coating.

Six-tank washing machine

In the preparation of the metal parts for the prime coat, we employ a six-tank spray-type washing machine. The following is the tank line-up in the washer:

1. Alkali wash, using 1 oz. per gal. of cleaner, at least 180° F.
2. Hot water rinse, with overflow, 170° F.
3. } Phosphatizing, at 160° F.
4. }
5. Cold water rinse, overflowing
6. Chromate, phosphoric acid rinse, at a pH of 4.5

Two-tank material system for flow coat machine

Our flow coating machine incor-

finishfoto

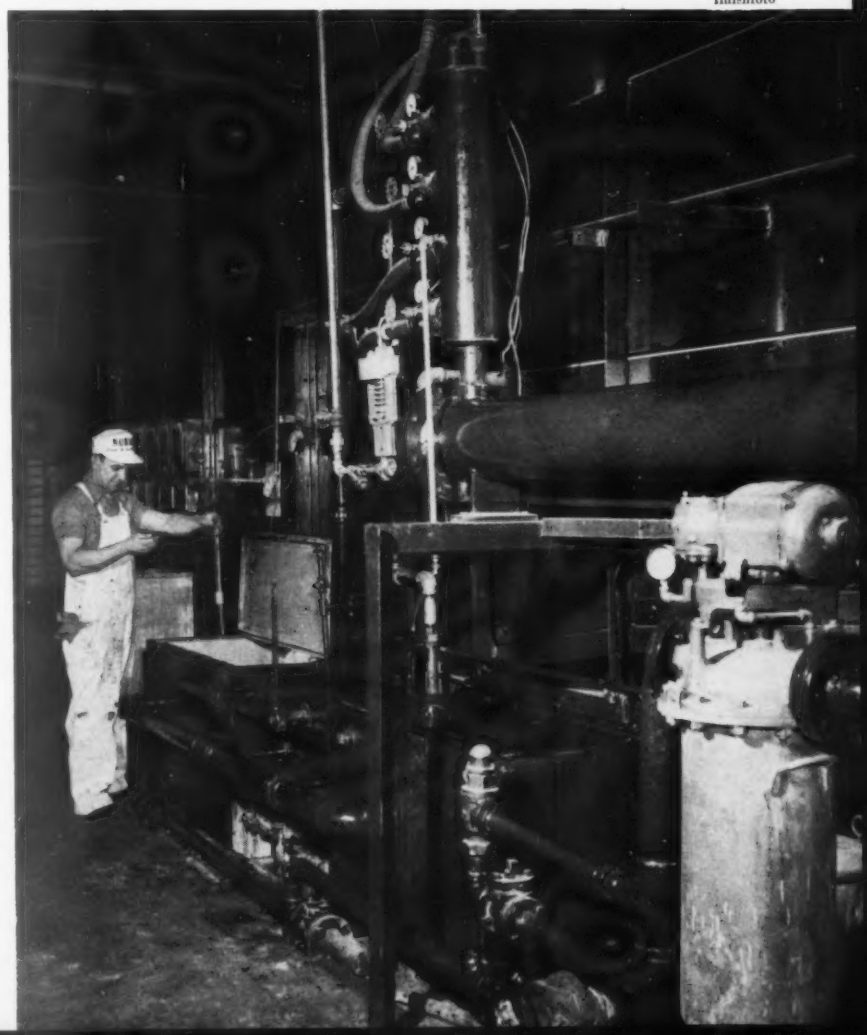


Photo shows operator taking viscosity of paint in flow coat machine. Tank in center is for solvent. Vertical manifold has four pressure gauges. Large horizontal tube is heat exchanger for temperature control of paint. In foreground is a motorized continuous filter.

finishfoto

Conveyor to entrance end of flow coating machine showing some of the typical parts on which prime coat is applied by flow coating. Note complete dishwasher cabinets. Both steel and aluminum parts are coated simultaneously.

porates a two-tank system, one for paint and one for solvent, the latter being a supply tank only. With this equipment we can clean out the entire flow coating system very readily.

The flow coating primer used is circulated and strained continuously through a rotating, self-cleaning filter. The material is maintained between 85° and 90° F. A viscosity test and a primer temperature test are taken every two hours. The viscosity test is 19 seconds with a No. 2 Zahn cup.

Rotating applicator

The mechanism in the flow coating machine for applying the primer consists of three variable speed rotating units, one located at the bottom and the others mounted on the side of the spray chamber. Each unit carries an adjustable arm with two spray nozzles. In addition to the rotating units, there are also four fixed nozzles mounted in the ceiling.

There are individual pressure regulators for each feed, four in all. Pressure equalization and pre-heating are both handled ahead of each individual line.

Pre-heating is done in the storage tank and in the manifold feeding the individual lines.

Vapor-laden chamber for draining

The purpose of the vapor chamber, of course, is to keep the paint "open" to prevent sags, air bubbles, silking, and heavy beads and other defects common to ordinary dipping or flow coat operations.

After the ware has been properly flow coated, according to pre-determined standards, it passes through a 50-foot travel in a vapor-laden chamber. It is necessary to properly balance the density of vapor, and this is controlled by dampers.

The final drain is completed on the same conveyor, with 40 feet of travel provided for the final drain outside the vapor-laden chamber.

Because of our practice of applying a black finish coat to the toe plate and baking this with the prime coat, the prime-coated cabinets must first be subjected to an infra-red accelerated drying, so that the black can be applied for the final baking of the prime coat. This accelerated drying is accomplished in about four minutes, in an infra-red bar-type oven. (This could be accomplished by air drying, if sufficient conveyor length were available between operations. The accelerated drying, naturally, conserves space.)

Overhead ovens used

The prime coat is baked in an overhead gas-fired (indirect heater) oven. Baking time is 40 minutes at 290°-300° F.

The prime-coated ware then goes to a filtered air spray chamber, where three sprayers apply the finish coat. The white finish then gets a bake at 325° F. for 40-45 minutes.

Final finish stands 150-hour salt spray test

Our early skepticism referred to led us into extensive experiments for over two months, before we replaced our 40-foot spray booth with the flow coating machine. It is our feeling at Hotpoint that great improvements in paint materials, combined with advances in equipment, must be largely credited for the present successful automatic operation of this system.

The paint must take a terrific beating. All of the material is reclaimed from the flow coating machine. We

to Page 62 →

DEFENSE WORK

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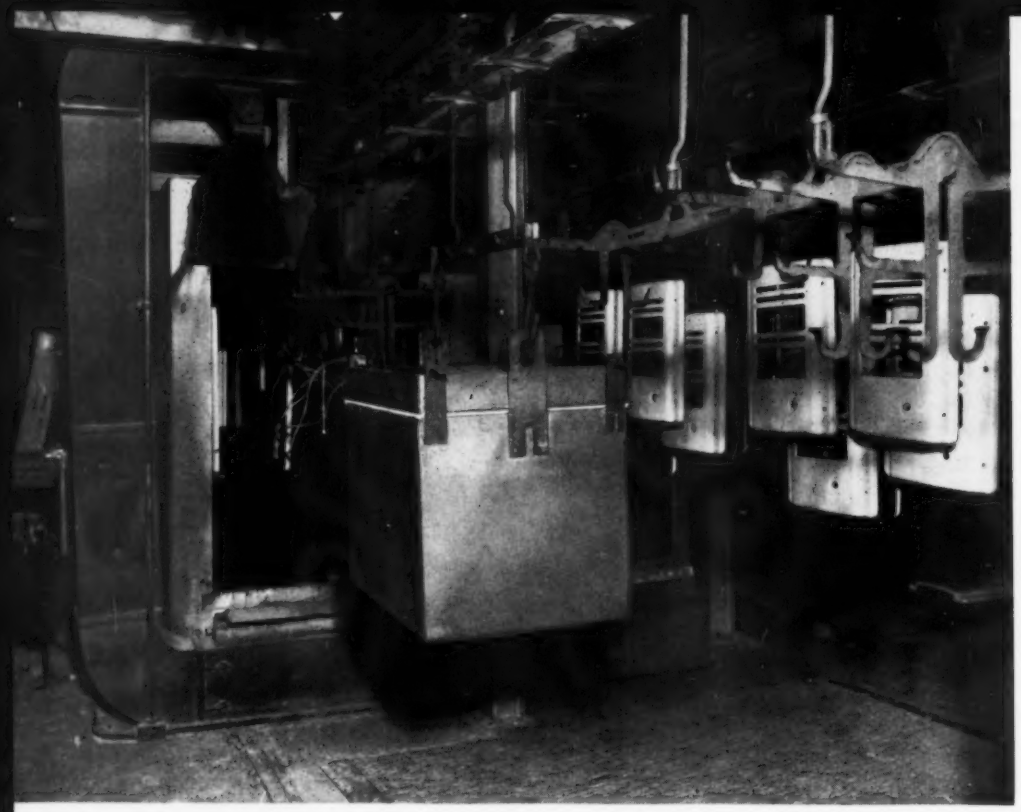


Photo shows a Bozsin Box entering a continuous porcelain enameling furnace.

New temperature-gradient box checks furnace characteristics

by M. Bozsin • FERRO ENAMEL CORPORATION, CLEVELAND, OHIO

DEVELOPMENT of the porcelain enameling industry's first temperature-gradient box, now known as the Bozsin Box was completed in June, 1947, by Bozsin and Vana, of Ferro Enamel Corporation *(see* finish, *Vol. 5, No. 7, July, 1948)*. The temperature-gradient equipment has been modified and greatly improved since its early use.

The newly designed box has several advantages in operation as well as in weight and size, and is being used for both continuous and box type enameling furnaces. The first box weighed approximately 800 pounds. The second box, built in 1948, weighed 575 pounds, and the new box weighs less than 400 pounds.

Box checks six furnace points with single run

This new box is a unique design in which every inch of available space is used to advantage to decrease the weight and size. In addition, the instrument gives more information than the previous box, in that the recording instrument is an electronic six-point multiple recorder, in contrast with a three-point recorder, being currently used. Thus, one run of the instrument through a continuous furnace checks six points simultaneously, after which furnace adjustments can be made if required.

During the run through the furnace, the recorder automatically switches to each of the six measuring points, in sequence, by means of a selector switch incorporated in the recorder. The measured temperature at each of these points is recorded on the instrument by means of a characteristic symbol which readily identifies each record with an associated measuring point.

The previous method, using the first box, meant two runs of the instrument through the furnace, first to get the vertical, and second to obtain the horizontal heat distributions.

Determines causes for furnace difficulties

During the few years during which temperature gradients were run on various furnaces throughout the country, many cases of temperature difficulty were corrected. There are numerous specific examples of problems encountered, but most or a combination of difficulties were due to one of the following causes:

1. Improper burner adjustment
2. Improper draft
3. Improper zone control
4. Overloading of furnace
5. Improper chain speed
6. Thermocouple location and maintenance

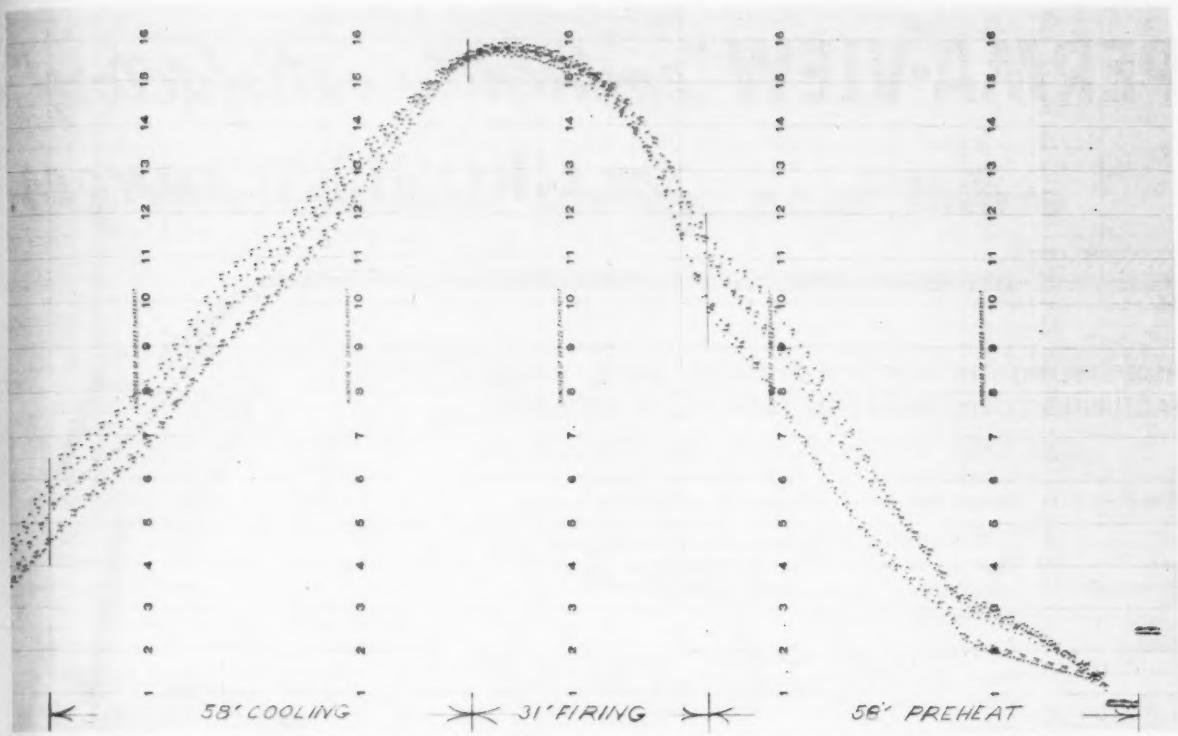


Chart from recording instrument shows a typical furnace curve obtained with new Bozsin Box.

7. Ware temperature variations due to design
8. Time of "soaking" period
9. Peak "soaking" temperature
10. Temperature relation between ware and control temperature.

The accompanying photographs show the general makeup of the new box.

The chart shows the type of curves obtained with the new box which has made test runs in some six plants in the country.

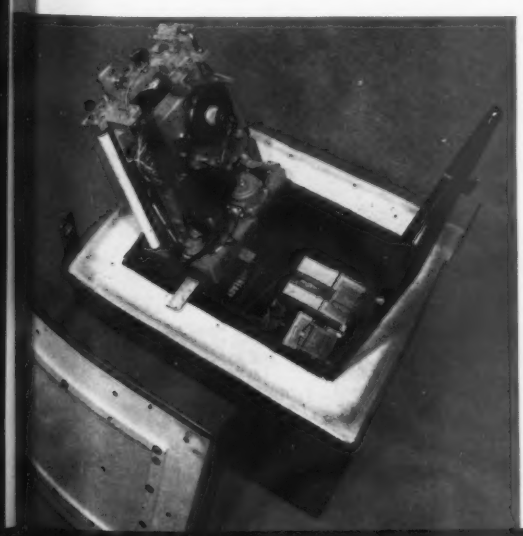
This new box was designed and constructed with Ferro specifications by Gilmore Technical Associates, of Cleveland, and the metal was fabricated by Klaas Machine & Manufacturing Co., also of Cleveland, Ohio.

Maximum instrument temperature 86° F. when used in furnace at 1560° F.

On the test run of the box with a furnace setting of 1560° F. and 17 minutes furnace travel, a maximum temperature of 86° F. was reached inside of the recording instrument.

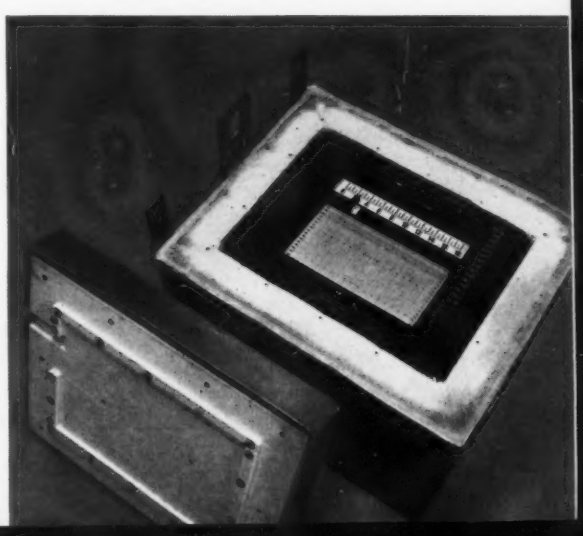
Enamelers in this country are familiar with the use of the equipment as part of the service of the Ferro Analytical Service Department for the complete chemical and physical checking of porcelain enameling plants in the United States and Canada.

The first box of the new design is being exported to Ferro Enameling Company of Holland, Rotterdam, Holland. There it will be loaded, along with a traveling analytical laboratory, into a station wagon to form the basis for Ferro-Holland's analytical service. The service has already been scheduled for Norway, Sweden, Denmark, Belgium, Holland, Western-Germany, Italy, and Switzerland. Being constructed are additional Bozsin Boxes of the new design for Ferro plants in Canada, England, and Australia.



Left: An internal view of recorder in insulated box.

Right: Recorder is shown assembled in operating position.



PERMA-VIEW *"eminently satisfactory"* *for* CROSLEY *ranges*

HERE'S WHAT THE CROSLEY DIVISION, AVCO MANUFACTURING CORP., THINKS OF PERMA-VIEW WINDOWS:

"Use of Perma-View oven door windows in the top model of our 1951 line of Crosley electric ranges has proved eminently satisfactory.

"Installation is simple, and the fact that we have had few or no service calls related to the windows is evidence of excellent performance in homes throughout America.

"The oven door window is a feature which has a strong appeal to housewives, and it definitely adds to the sales appeal of the ranges in which it is incorporated."

PERMA-VIEW is adding sales appeal to the top lines of more and more range manufacturers. Our engineering department will show *you* how easily PERMA-VIEW windows can be adapted to *your* range doors. Phone, write, or wire for contact.

"OUT OF OUR CARTON — INTO YOUR DOOR"
It's as simple as that!

CROSLEY

Dear Mr. Miller

One of Perma-View oven door windows in the top model of our 1951 line of Crosley electric ranges has proved eminently satisfactory.

Installation is simple, and the fact that we have had few or no service calls related to the windows is evidence of excellent performance in homes throughout America.

The oven door window is a feature which has a strong appeal to housewives, and it definitely adds to the sales appeal of the ranges in which it is incorporated.

Yours very truly,

MILLS ENGINEERING COMPANY
3683 EAST WILLIS DETROIT-7-MICHIGAN

The steel outlook for the near future

a prediction of the steel situation for the remainder of this year

AN ADDRESS BEFORE AHLMA *by Benton J. Willner* • MANAGER, SHEET & STRIP SALES, INLAND STEEL COMPANY, CHICAGO

THIS discourse will cover the history of the steel business with emphasis on its growth; discussing the present steel situation, and giving my personal view on what we can look forward to in the near future.

We will start with a few statistical figures which I believe are necessary to cover this subject, and when referring to industry tonnage, I will use even million figures.

Steel production has been the most important factor in the growth of our nation and the high standard of living we now enjoy in the United States. Just to give you one example: One hundred years ago 9 out of 10 of the male population worked on the farms and only 1 out of 10 could be spared for manufacturing and trade. Mainly through the development of steel for machinery, also fuel for power, the back-breaking work of one hundred years ago has been eliminated and the productivity of the farmer has been increased tenfold so that today the proportion of the population engaged in agricultural work has almost reversed what it was a century ago. Without the mechanical aids provided by steel and the power from fuel, this revolution could not have taken place.

In the year 1910 there were 28 million tons of ingots produced in the United States; in 1920, 47 million tons; in 1930, 46 million tons; in 1940, 67 million tons, and in 1950, 97 million tons, which is very close to fifty per cent more tonnage than produced in 1940. It is anticipated that some time early in 1953 there will be close to 120 million-ton-ingot capacity, which almost doubles the production of 1940.

From 1940 to 1950, the increase in population was 15 per cent. The average yearly consumption per capita, covering the years 1920 to 1940, was 668 pounds, and during the first quarter of 1951 the production was at the rate of 1370 pounds per capita, or over double the prewar period.

Home Laundry Mfrs. Meet

This timely report on the steel situation was presented by Mr. Willner before the semi-annual meeting of the American Home Laundry Manufacturers Association, held June 16, in Chicago. Attendance at this AHLMA meeting was one of the largest in history.

Look for complete information and photographic coverage of AHLMA meeting in special Home Laundry Industry section of September *finish*.

Steel mills need scrap

The first four months' ingot production this year was 34½ million tons, or at the annual rate of 103½ million tons. At the present time—that is, for the past 2½ months—the steel industry in the U. S. has been producing at the rate of 107 million tons annually. To increase this rate of production—or possibly even to maintain it—it is very important that all industries make every effort to ship all accumulated scrap back to the mills; too, it would be very helpful if each individual company made a scrap drive in their own organization in order to see that any obselete equipment made of steel is started on its way back to the mill.

The government has made quite a drive for increased steel-making capacity, and it now appears that due to the scarcity of scrap it will be quite a problem to maintain open hearth operations at capacity for the remainder of the year.

It might also be appropo to mention here that in 1938 the steel industry shipped 21 million tons of finished steel, and in 1950 in excess of 72 million tons of finished products, which is close to 3½ times the tonnage shipped in 1938 . . . and 1938 was far from an extreme depression year.

However, if we should again encounter a year with no greater demand than in 1938, the steel industry as a whole would operate considerably less than 30 per cent of capacity.

For the last 30 years, including the 40's in which we had World War II, and the extreme postwar demand for steel, the average production of the industry over this period has been 70% of capacity.

Regarding sheet and strip steel, a few figures covering these products:

In 1940 there were 12½ million tons of sheet and strip produced; in 1949, 19 million tons, and in 1950, 26 million tons, or more than double the 1940 figure. When the present expansion programs are completed (in 1953), it is anticipated that there will be a capacity to roll 34 million tons of sheets and strip.

1949 was the first time in history that shipments of cold rolled sheets were larger than hot rolled sheets. This also was true in 1950 when the industry shipped 7,800,000 tons of hot rolled sheets and 9,350,000 tons of cold rolled sheets. The postwar period was the first peace-time period where the demand for all rolled steel

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Depend on Plant-Tested PORCELFRIT ★ Depend on Plant-Tested PORCELFRIT ★ Depend on Plant-Tested PORCELFRIT ★

Authors' condensations of ACS Enamel Division papers

THE following are more authors' condensations of technical papers presented before sessions of the ACS Enamel Division during the 53rd annual meeting of the American Ceramic Society. A listing of authors of condensations appearing in both this and the June issue of *finish* is presented following the condensations.

The elements of the third, fourth, and fifth series as possible adherence-promoting materials for sheet-iron enamels

by J. H. HEALY *and* A. I. ANDREWS

This presentation — based on the cobalt-reduction theory, the results reported by other investigators, data collected by the authors, and the properties of the elements—is a method for studying the suitability of other materials as adherence-promoting constituents.

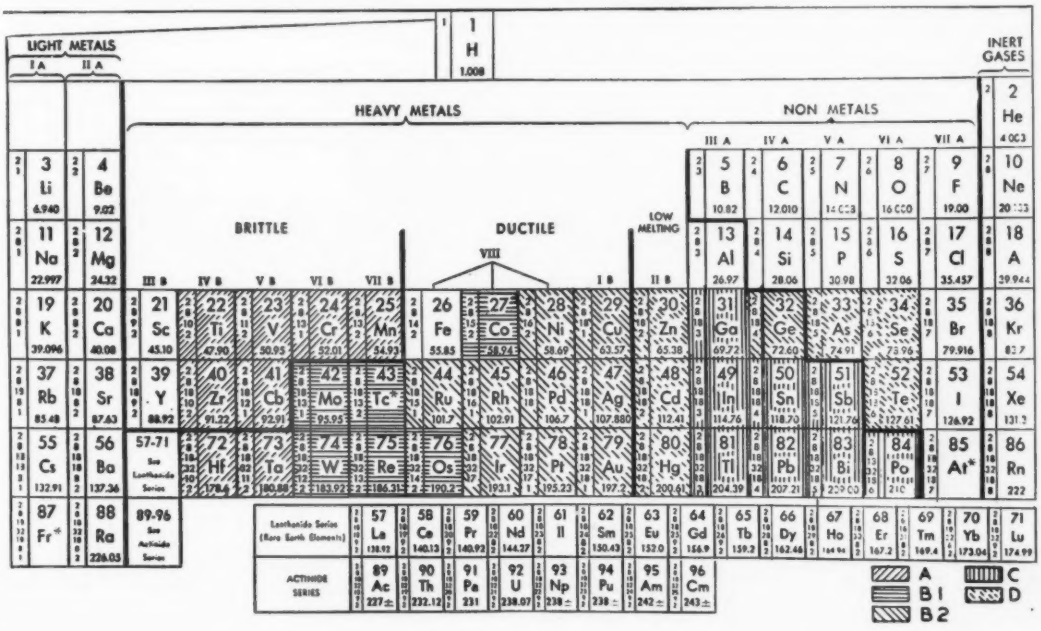
The properties of the elements which would be expected to influence adherence are heat of formation of oxides of the elements, melting point, vapor pressure, atomic radius, unit-cell dimension, and hydrogen solubility. The heat of formation of oxides of the elements, providing the valence state of the element in the glass is known, is an index of the ease of reducibility of the oxide to the metallic state. The melting point of the element determines whether the element is present at the enameling temperature as a solid or liquid. The vapor pressure of the element determines whether the element is present at enameling temperatures as a solid, liquid, or gas. Since most of the elements, which are present in the metallic state at the iron-enamel interface, have atomic radii within 15% of the atomic radius of iron, therefore satisfying the Hume-Rothery rule of alloying elements; another property, the unit-cell dimension, has to be considered to determine whether or not the reduced metal will attach itself to the base metal, iron. Adherence would be expected if the 'a' distance of the unit-cell dimension of the reduced metal is similar to that of iron. The reduced metal must absorb hydrogen to produce dendrites.

An analysis of the properties of the elements of the third, fourth, and fifth series indicates that they can be divided into certain areas:

A. Elements whose oxides are not reduced to the metals.

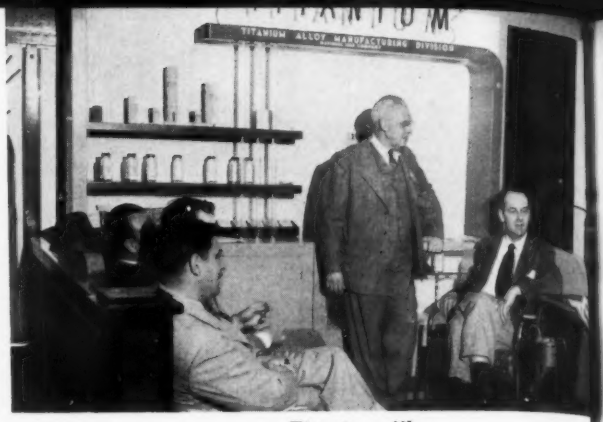
B. Elements whose oxides are reduced and are solids at enameling temperatures: (1) Elements with

PERIODIC CHART OF THE ELEMENTS



Classification of the elements of the third, fourth, and fifth series with respect to their adherence-promoting properties.

U. S. Stoneware



Titanium Alloy

SNAPSHOTS FROM ACS MID-CENTURY MEETING

(see news coverage in June issue of finish)

Rotospray

finishfotos

O. Hommel

finishfotos

Robbins & Myers

L. R. Kerns

Metalloy

Drakenfeld

unit-cell dimensions similar to iron; (2) Elements with unit-cell dimensions quite different from iron.

C. Elements whose oxides are reduced and are liquids at enameling temperatures.

D. Elements whose oxides are reduced and are gases at enameling temperatures.

Some observations on the nature of cracks in porcelain enamel

by HENRY N. STAATS

This paper endeavors to show that many cracks in glass and porcelain enamels are impossible to see with the human eye, and despite their smallness constitute a useful source of design engineering information. This paper describes in detail the mechanism of how the "electrified particle inspection method" works on glass without a metal backing and porcelain enamels.

Four points which are important in the study of the effect of cracks in glass and enamel are discussed in detail. These are: (1) where discoloration is a factor such as on the front or easily seen portion of an enameled object, (2) where the glass must protect the base metal against corrosion, (3) where design and engineering information is desired, and (4) where it is desirable to predict the performance of an enameled object.

On the basis of evidence presented in this report, the occurrence of cracks in porcelain enamels seem to follow certain general rules:

1. Cracks in glass or enamels can exist too small to receive a discolorant or to be detected by the human eye.

2. Cracks are detectable down to less than a tenth of a micron in width by the use of electrified particle inspection methods.

3. Cracks always occur at right angles to the direction of an applied stress.

4. Cracks formed by tension on the surface of enamels may weaken enamels to a secondary, lesser applied tension stress.

5. Tension cracks seem to sensitize enamels to subsequent applied compression stress.

6. The wedging action of included dirt, hydrated crystal growth, or mismatched glass particles in a crack may account for the apparent sensitization of a tension crack to a subsequent compression stress.

The paper concludes with a brief discussion of why shake and impact testing sometimes does not correlate with field failure of enamels, and describes the use of electrified particle inspection equipment in a typical enameling plant. It is suggested that the equipment be used in the following sequence:

1. Establish the necessity of inspection by correlation.

2. Use the equipment as an aid to decision in inspection.

3. Trouble shoot with the method.

4. Use the method as a design engineering tool.

The author concludes with the thought that the method must be used with understanding that it is one more tool in the engineer's bag of tricks, not as a revealer of the deep dark sins of the enameler.

Comparison of warpage, crossbend, torsion and expansiometer ring tests on titanium enamels

by JAMES F. LOCHRIDGE *and* GRANT E. MILLER

The fit of titanium enamels as determined by warpage and the expansiometer ring tests is compared to torsion and crossbend failures. Titanium enamels used for the tests cover a wide range of warp values from low to high compression in the enamel. A correlation is shown to exist between the values of crossbend failure and warpage and ring expansiometer values. The warpage is shown to vary directly with the ring values, and crossbend failure is shown to increase as warpage of the various enamels increase.

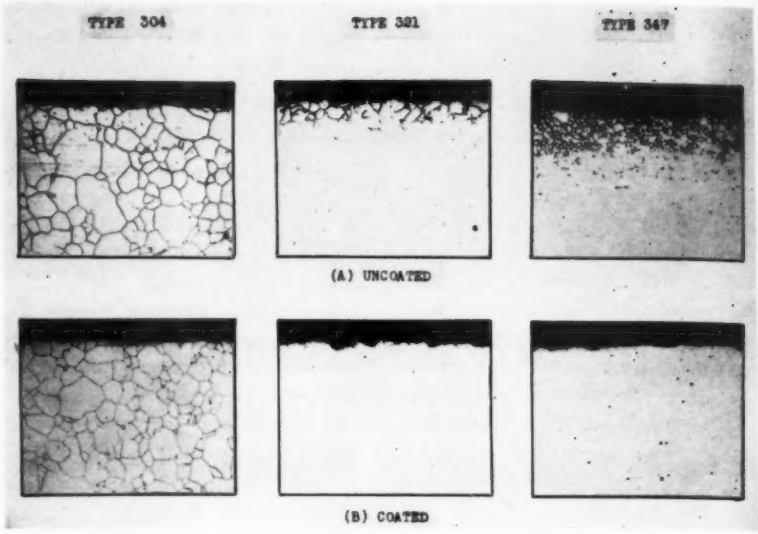
However, the torsion results do not fall in a pattern which is governed by the compressive stresses in the enamel. Most of the work was done over a normal ground coat base, but some of the work was run on a titanium-killed steel. Torsion results direct on the steel show considerable variation from the results obtained by the same enamels when run over ground coat.

Ceramic coatings for the prevention of carbon absorption in four heat-resistant alloys

by JOSEPH W. PITTS *and* DWIGHT G. MOORE

In recent years, ceramic coatings have been used with success for the protection of aircraft exhaust-system alloys. The primary purpose of the coatings is to retard the deterioration of the alloys by the various corrosive agents present in the exhaust gases.

According to Heron, Harder, and Nestor[1], the most important of these corrosive agents present in the gases from internal combustion engines are lead compounds, oxygen, hydrocarbons, carbon monoxide and free carbon. Earlier studies at the National Bureau of Standards have demonstrated the ability of ceramic coatings to protect alloys from oxygen, and more recently lead bromide, but there have been no studies reported relative to the effectiveness of the coatings in preventing carbon penetration.



Legend: Photomicrographs (X100, cupric-picral-nital etch) of the surfaces of both uncoated and ceramic-coated stainless steel specimens after box carburizing for four hours at 1650° F. These photomicrographs, and others like them, showed that ceramic coatings were effective in preventing carbon absorption into the surface of three 18-8 type stainless steels.

Note: The type 304 steel, which is unstabilized, shows carbide precipitation throughout its entire structure. However, the greater amount of carbide formation near the surface of the uncoated specimen indicates that some carbon absorption has occurred during the carburizing treatment.

Carbon penetration occurs when heat-resistant alloys are operated at high temperatures in the presence of carbon monoxide, carbon, or some of the hydrocarbons. That carbon is absorbed during operation of stabilized 18-8 stainless steel aircraft exhaust systems has been demonstrated by Kahn, Oster and Wachtell[2] and by Hubbell[3]. The absorption is followed by carbide precipitation at grain boundaries, and, according to Kahn, Oster and Wachtell, this carbide precipitation may be responsible for many of the failures in stainless steel exhaust systems.

In the present investigation, three ceramic coatings were applied to four heat-resistant alloys, and then tested for their effectiveness in preventing carbon absorption under strongly carburizing conditions; i.e., box carburizing. At 1350° F. no carbon pick-up occurred after the four-hour treatment, but at 1500° F. and 1650° F. carbide precipitation was evident in the uncoated stabilized 18-8 steels extending down from the surface to a depth of as great as 0.007 in. In most cases the ceramic coatings completely prevented the absorption. Inconel showed no evidence of carbon absorption under the test conditions used.

1. Heron, S. D., Harder, O. E., and Nester, M. R.: "Exhaust Valve Materials for Internal Combustion Engines." (Symposium on New Materials in Transportation, Detroit Spring Meeting, American Society for Testing Materials, March 6, 1940. Published as a booklet by the American Society for Testing Materials, Philadelphia, Pa.)

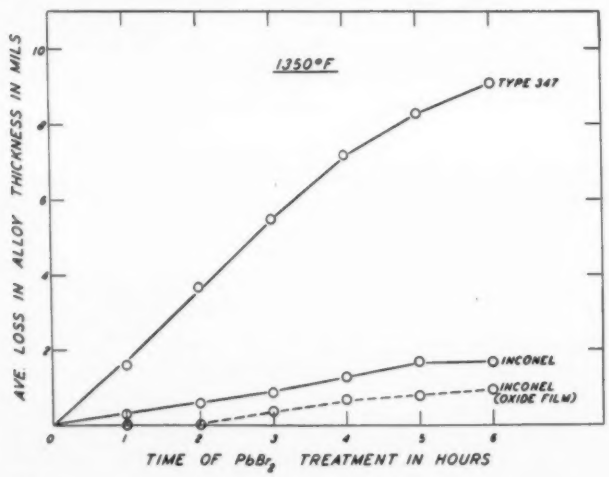
2. Kahn, W., Oster, H., and Wachtel, R.: "Investigation of a Type of Failure of 18-8 Stabilized Stainless Steel." Trans. ASM, 37, 567, 1946.

3. Hubbell, W. G., "Carbon Absorption of 18-8 Stainless Steel." *Iron Age*, 157, 56, 1946.

Effectiveness of ceramic coatings in reducing the corrosion of five heat-resistant alloys by lead bromide vapors

by DWIGHT G. MOORE *and* MARY A. MASON

Lead compounds in the combustion products of high octane fuel have been suspected of being a contributing factor in causing failures of alloy parts in aircraft exhaust systems. The principal lead compound present in the exhaust gases is lead bromide and it was desirable to determine whether this compound, which is present in the vapor state at operating temperatures, could be corrosive toward heat-resistant alloys under laboratory test conditions. It was also desirable to determine whether ceramic coatings, which have been used successfully on some aircraft exhaust parts, were protective against any corrosion that might occur under these conditions.



Legend: Loss in thickness-time curves for type 347 stainless steel and Inconel when exposed to $PbBr_2$ vapor in an air atmosphere at 1350° F. The lower curve is for Inconel that had been pre-oxidized by heating in air for 6 hours at 1350° F. The three ceramic coatings included in the test protected both alloys for the full six-hour test.

To obtain answers to these questions, a test was devised in which five heat-resistant alloys in (a) an uncoated condition, (b) a preoxidized condition, and (c) with three different ceramic coatings were exposed for six hours to lead bromide vapor in air atmosphere at temperatures of 1350°, 1500° and 1650° F. Under these conditions, a fairly rapid corrosion accompanied by a loss of thickness, occurred on both the uncoated and pre-oxidized alloys, but on the

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The consumer durable goods picture for the coming six months

"aggregate supply of consumer goods in fourth quarter is not likely to fall very far short of the first-quarter figure"

FROM AN ADDRESS BEFORE ICHAM *by Martin R. Gainsbrugh* • CHIEF ECONOMIST, NATIONAL INDUSTRIAL CONFERENCE BOARD, NEW YORK CITY

"ADDRESSING a group of manufacturers of consumer durables presents, today, an imposing challenge. Certainly no sector of the economy need be more concerned over materials problems; no other sector has been so directly affected by credit controls; no other sector has experienced so serious a 'softening' of consumer demand. And no other sector will carry a larger responsibility in building up the nation's strength in the months and years to come. However much or little the course of the mobilization will affect other industries, its impact on the consumer durables producers is bound to be direct and substantial.

No historical parallel to present economy

"In attempting to sketch in the outlines of business trends for the durables sector over the next several months, the analyst would therefore be well advised to choose his words carefully. This is the more necessary, unfortunately, since neither the record of the partial mobilization in the full year now closing, nor the trend of business in the past six months, affords a very reliable basis for conclusions about the remainder of 1951.

"In the first place, there is no textbook on the economies of a partially mobilized, defense-type economy, and there is no good historical parallel that can serve as a guide. The mobilizing economy of 1939-1941 is out as a model on several scores, not the least of which is the fact that the economy then had a large reservoir of unemployed assets and manpower upon which it could call, whereas last June (1950) it was already operating at a very high level and has long since

reached what would be called full employment in ordinary peacetime years.

Defense "take" by end of year may be only 15% of output

"And yet the full-employment years of World War II, while they may serve as a guide in some ways, were fundamentally different in other ways that the parallel may be as misleading as it is helpful. During World War II, about 20% of the total labor force was in the armed services; in the months (and years) ahead, the figure may be only about 5%. In 1944 national defense took 40% of our total output of goods and services. *Right now, national defense takes less than 10% of output, and may take only about 15% by the end of the year. At its peak, near the end of 1952, defense is not expected to absorb more than 20% of output, and thereafter the percentage may well subside.*

"During World War II, the drain on our civilian economy was such that in spite of an extension of output far beyond the ordinary limits of the then industrial capacity and labor force, rationing was required in major areas of the consumer market, and production in some non-essential areas, including automobiles, was halted. But this time the bulk of our physical resources and labor force should be available for civilian output. Barring any change in the scope of the mobilization, nothing like the dislocation of consumer markets experienced in World War II is in prospect.

"The analyst is thus caught with his model down.

Mobilization pace difficult to predict

"At the same time, the pace of this mobilization is itself getting more and more difficult to predict. In the past year a large part of the increase in defense expenditures — perhaps about 50%—has come from increases in pay and subsistence, as the manpower of the armed services has risen toward the announced goal of 3.5 million men. This kind of increase was stable and relatively predictable. . . . But from here on out increases in defense expenditures will come primarily, and perhaps almost exclusively, from the increased flow of military hardware. Such increases may be much less stable; they may accelerate rapidly as tooling up progresses, and may have a much heavier inflationary impact per dollar spent.

Thus defense expenditures—the overriding factor setting the business pattern of the next six months—seem to be approaching a major change in their composition, in their rate of increase, and in their inflationary potential.

These two fundamental problems—the absence of any historical guide to the economics of a half-war, half-peace economy, and the imminent shift in the impact of the defense effort—have been further complicated by the strangely deflationary behavior of business trends over the past several months. . . .

"In mid-February, wholesale prices flattened suddenly, and moved sideways until the beginning of May, when they entered on a gentle downward drift. Broad indexes of industrial commodities declined slowly but steadily during April and May, in spite of the fact that many individual commodities reflected in the indexes have stuck at their ceilings because of real scarcity. In the commodity markets, spot and future prices fell sharply and going into June were still aiming generally downword. The recent sharp decline in basic commodity prices suggests a further undercutting of the general wholesale price level. . . . The pattern of retail trade has followed the pattern of prices. . . .

Consumer income after taxes running upward fast

"What is particularly striking in the retail picture is the fact that consumer income after taxes has been running upward fast, so that the rate of personal savings now bids fair to be one of the sensational figures of the second quarter. Unless demand at the retail counter picks up substantially in June, the consumer will have voluntarily adopted the same role, in controlling inflation, that he had to be coaxed into playing by patriotic war bond appeals in the early 1940's.

"By May, secondary effects of the adjustment had begun to appear. Electric power consumption figures were moving down at what appeared to be more than a normal seasonal rate. Consumer debt and privately held money supply were dropping somewhat more than seasonally. Business loans had stopped rising and were fluctuating narrowly. Paperboard demand, a broad but good indicator of industrial activity, was reported to be weakening. In scattered areas, collections on accounts receivable were reported slower. . . . And the sales resistance at the consumer level has backed strongly up the distribution stream. . . .

"There seems now to be ample evidence that the major factor in the present adjustment has been surplus, rather than shortage. In selected areas of the civilian economy—and those areas include many semi-durables as well as most durables—the vast outpouring of civilian goods since Korea has unexpectedly precipitated a buyers' market. . . .

Reduced urgency for purchase of durables by the consumer

"Preliminary results of the Federal Reserve Board's 1951 survey of consumer finances indicated reduced urgency in consumer attitudes toward the purchase of automobiles, major appliances and houses. There was in fact some indication of this as early as the fourth quarter of 1950, when buying emphasis (after eliminating seasonal factors) shifted sharply to non-durables, but the implications of the shift were lost when durables shared fully in the recovery of scare buying in January and February.

"This is not to underestimate the importance of controls in producing the decline in prices, output and demand that has thus far characterized the civilian sector in the second quarter. . . .

No acute shortage in civilian market for remainder of '51

"Barring any change in mobilization plans, and noting again the difficulty in forecasting military procurement for the months ahead, prospective shifts in the distribution of the gross national product do not make a good case for any acute shortage in the civilian market during the remainder of 1951.

"Here are the figures. The increase in the annual rate of military expenditures from the first quarter of 1951 to the last quarter of 1951 may run to about 70%, or about $18 billion (in first-quarter, 1951, prices). And while expenditures for hard goods are on the rise—as they will still be at year-end—the commitment of capacity to military output may run well

to Page 60 →

Nineteenth annual meeting of cooking and heating appliance manufacturers

AN attendance of approximately 800 was reported by officials of the Institute of Cooking and Heating Appliance Manufacturers at the ICHAM 19th annual convention and exhibit held June 4-6, at Cincinnati's Netherland Plaza. Official registration at the meeting was just under 550.

The Institute product section sessions were very well attended, with the general session on Tuesday morning, June 5, drawing a full house of stove manufacturers. The colorful exhibits of the industry's suppliers were again one of the highlights of the convention.

General session

Presiding at the general session was Walter F. Muhlbach, Institute president, and director of distribution and research, Florence Stove Company. Following presentation of the "President's Annual Report," Muhlbach introduced a panel of well-informed experts who gave the stove men some interesting commentaries on today's half-war, half-peace economy.

Martin R. Gainsbrugh, chief economist, National Industrial Conference Board, led off with a timely address entitled "Defense — Retrospect and Prospect." His talk was concerned with the effect of the defense effort on the production and supply of consumer goods for the remainder of 1951. (For a comprehensive report of this address, turn to page 39).

Realistic sales planning needed now by American business

James C. Olson, partner, Booz, Allen and Hamilton, management consultants, told the ICHAM general session that realistic sales planning *now* by American business might well prove to be our most effective weapon at some future date in the world-wide conflict between capitalism and communism.

Should Russia elect to defeat us in a bloodless war, she would probably do so by offering peace and counting on our highly-geared economy, suddenly devoid of its war and preparedness program production, to collapse. The resulting unrest would make a fertile field for communist aggression, said Olson.

Three alternatives for American business

Although this is only one of three alternatives facing the country, it is a factor with which to be reckoned he pointed out. We will be hard pressed to keep our huge productive capacity going at full speed turning out peace-time goods alone if we don't start now to plan their distribution, he stated. →

Photo shows some of the stove men in attendance at the general session meeting. finishfoto

Above left: Jack McLaughlin, Tinnerman, C. F. Rebeta, G-E. Background, G. F. Sindelar, H. H. Welland, Tinnerman.

Above: Melvin Verson and Emmet O'Connel, of Verson. Background: Walter Johnson, Verson, Ed Warmack, Warmack Stove.

Left: G. A. Bowman, Hal Singleton, Robertshaw-Fulton Controls; L. O. Morin, Chattanooga Implement; F. H. Post, R-F; Rex Conley, Chat. Imp.; W. D. Mostin, A. E. Gabris, J. L. Gabris, R-F.

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Olson listed the other two alternatives facing American business as:

1. In the event of all out-war, to back our armed forces 100 per cent with needed production and to distribute goods available to civilians as equitably as possible.

2. In the event of a prolongation

Betty and Jean ("Gloria") were two attractions at the booth maintained by four large frit manufacturers (see news story on page 56).

Left: Overall view of the Owens-Corning Fiberglas Carnival, including a "peep show" and a weight guessing contest.

Below left: George Small, of Florence Stove Company, with R. S. Penn and E. B. Maire, both of Penn Electric Switch Company.

Below: Wm. Wildern, Detroit Brass, O. W. Wegener, Premier Stove, and R. E. Imhoff and Joe Gabry, of Detroit Brass.

Above: George Smallwood, Oakland Foundry; Glen Hoover, E. L. Singley, W. H. Margenau, and B. P. Finkbone, Armco Steel Corp.

Above right: In Lux Clock booth are Christian Fegley, of Floyd-Wells Co., and Hank Gibson, of Lux Clock Mfg. Co.

ICHAM Officers

President: Walter F. Muhlbach, director of distribution and research, Florence Stove Company

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Right: In Ferro Enamel booth are John Wahlberg, of Keeler Brass; Hal Singleton, Robertshaw-Fulton; and Wm. Robinson, Ramler & Robinson.

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of our present "restless" peace, to build up our military arsenal without severe strain on our civilian economy.

Regardless of what is in the offing, it is the job of top management of business to plan for the conduct of the sales function under each of these possible eventualities. This calls for the careful preparation of alternative

Right: In left foreground are H. N. Tucker, of Coleman, and Bill Shearer, of Corning Glass Works.

Below: Tom Armel and Orrin P. Catlin, of Glidden; J. T. Grotenhouse, Silent Sioux Oil Burner; Tom Harvey, Glidden.

Below right: R. W. Hawes, Union Steel Products, with Ed Campbell, of Mount Vernon Furnace & Manufacturing Co.

plans, reviewing and bringing them up to date periodically, he said.

Lists 16 tools of management for sales planning

Olson concluded his talk by listing 16 tools of sales management to be considered in the preparation of any sales plan. These are marketing research, objectives, policies, programs, organization, budgets, territorial layout and quotas, reports, sales correspondence, recruiting, training, advertising, sales promotion, cost control and sales compensotion. Only by analyzing and fitting each of these factors into an overall plan can a company have a satisfactory blueprint for future operations, he said.

Trade association assistance stymied by bureaucrats

Worthwhile cooperation of trade associations with the Office of Price Stabilization and the National Production Authority is blocked by the anti-trust bugaboo raised by a few bureaucrats, George P. Lamb, lawyer and chairman of the American Bar Association Committee on Trade Associations, charged in his speech before the Institute.

Acting on instructions from the Department of Justice, Lamb stated, OPS and NPA have refused to permit trade association secretaries to attend meetings of industry advisory committees, which are required by law to be consulted on the drafting of ceiling price orders and materials control regulations. The result, he stated, has been to deprive Government of valuable information possessed by these secretaries, and to prevent businessmen not on the committees from receiving adequate reports of what is under consideration in Washington. (Lamb repeated these charges in Washington as a witness before the Senate Banking and Currency Committee holding hearings on extension and possible amendment of the Defense Production Act.)

Pointing out that our mobilization program is almost a year old, Lamb briefly reviewed the major steps taken so far to impose price controls and regulate the use of steel, aluminum and other materials. Putting these controls on business is comparable to starting an automobile, he said. The initial orders last fall and winter correspond to low gear; the mobilization effort has been put in second gear with the more detailed regulations of this spring; and when the Controlled Materials Plan and tailored price orders for individual industries are put into effect, that will be high gear.

The mobilization vehicle would be accelerating more like a Cadillac and less like a jalopy if trade association secretaries were permitted to make their full contribution, Lamb told the stove manufacturers.

The present situation is a step backward from World War II experience, he continued, because OPA permitted trade association secretaries to serve as secretaries of industry advisory committees, with highly beneficial results. The history of those days proves the anti-trust objections now being made are fictitious, because there has not been a single accusation of anti-trust violation made in court against those OPA advisory committees, concluded Lamb, who is also a partner of Kittelle & Lamb, Washington attorneys.

ICHAM Board of Trustees for 1951

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Managing Director: Samuel Dunckel, Institute of Cooking and Heating Appliance Manufacturers, Washington, D.C.

Seated clockwise: E. C. Thompson, King-Seeley; E. B. Yost, Sears & Roebuck; Leonard Raulston, U. S. Stove; E. E. Couch, John I. Foster, Jacobs Mfg.; Len Rogers Jr., U. S. Stove; and Charles H. Sohn, Socony-Vacuum.

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SNAPSHOTS OF STOVE MEN AT ICHAM CONVENTION

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J. J. Manning, Florence Stove; Chas. Glassman, Boston Stove Fdry.; E. W. Nagel, Wrought Iron Range; W. T. Trueblood, American Stove; H. E. Jalass, Cribben & Sexton; I. A. Prouser, Stove Wks.; K. C. Hampel, Odin Stove; S. B. Rymer Jr., Dixie Fdry.

C. V. Price, Quad Stove; G. J. Emrich, Emrich Co.; R. F. Johnson, Bellaire; Clark Beverly, Peerless; A. G. Feldmeier, Marsco; Geo. Small, Florence Stove; D. B. Fettig, Leo Tanzilli, Heinz Mfg.

A. T. Atwill, Quaker; J. C. Hemingway, Little Burner; Dean Olds, Coleman; Roy Johnson, A-P Controls; H. Tucker, Coleman; Robt. Reynolds, Wesco; J. F. Page, Detroit Lub.; Frank Hayde, Locke; J. W. Tweedy, Redmond.

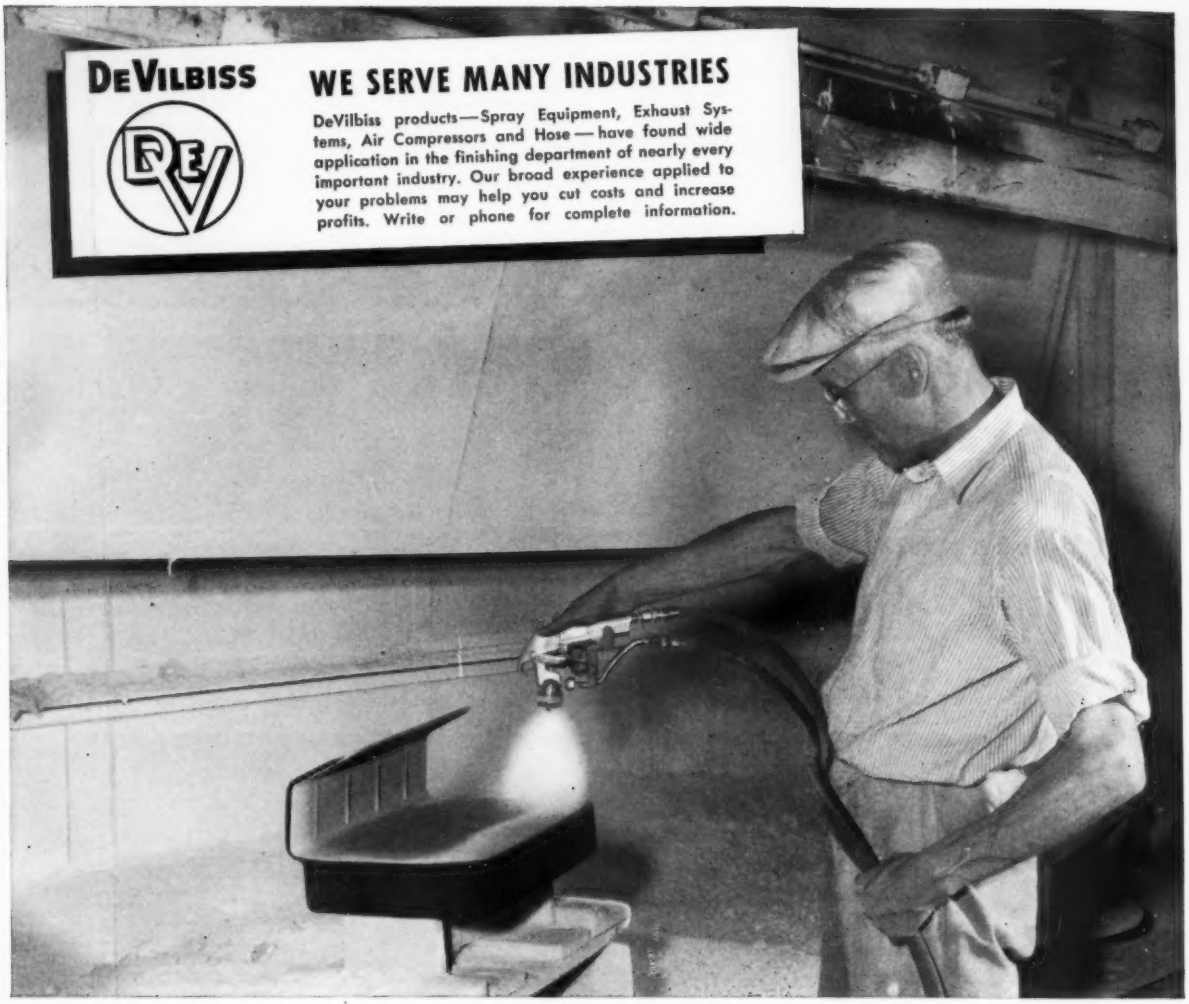
T. E. Keller, Florence Stove Company; David M. Maytnier, Ferro Enamel Supply; C. Fred Lucas, F. H. Schneider, Florence Stove; and W. L. Boudrot, of Tuttle & Kift.

Ira G. Corn, Jr., Dearborn Stove (Dallas, Texas); R. M. Liedstrand, A. L. Van Brunt, and K. J. Peterson, all of Dearborn Stove Company (Chicago).

F. W. Boynton, Murray Corp. of America; E. J. Bohnen, W. W. Hamilton, International Register; L. F. Hess, Michigan Tank & Furnace; W. H. Lancaster, Feldkircher Wire.

Ralph Hornbach, Roper; E. A. Meany, Youngstown Metal; Wm. Robinson, Ramler & Robinson; Willard Crandall, J. R. Kauffman, H. M. Bell, T&K; Norman Ramler, R&R; Frank Raymond, Keeler Brass.

M. F. Myers, B. R. Tritton, Carl Eversman, Robt. Johnson, American Stove; W. H. Hohmeyer, Detroit Lub.; J. M. Hurd, H. A. Moyer, Ing-Rich; Carl J. Reiff, Ferro; John Bayer, H. H. Gearhart, Am. Stove.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DeVilbiss products—Spray Equipment, Exhaust Systems, Air Compressors and Hose—have found wide application in the finishing department of nearly every important industry. Our broad experience applied to your problems may help you cut costs and increase profits. Write or phone for complete information.

WHY IS LOW PRESSURE SPRAYING SO PROFITABLE?

Because you get higher quality jobs at a lower cost per unit!

Consider the savings of this manufacturer of porcelain enamel products who recently converted to DeVilbiss low pressure ceramic spray guns.

Air savings: Instead of the 70, 80 or 100 lbs. operating pressure required by old methods, new DeVilbiss low pressure guns need only 50 lbs.—a substantial saving in power costs.

Material savings: With DeVilbiss low pressure guns, overspray is reduced to the point where enamel consumption is generally cut as much as 35%.

Maintenance savings: Overspray accumulation is cut 50%—a big reduction in material losses and clean-up time.

Operator advantages: The new low pressure guns can be moved more slowly, more evenly. Fewer passes are needed. Operator fatigue is reduced. A higher standard of quality is maintained over a longer period. There are fewer rejects, less reworking and a lower cost per unit.

How much can you save by switching to DeVilbiss low pressure spraying? Call our nearest branch office or write the factory direct for complete information.

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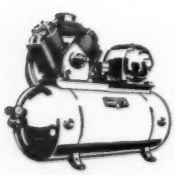
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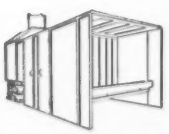
Ceramic Spray Booths

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THOR PLANNING NEW PRODUCTS

Before the annual stockholders meeting of Thor Corporation, Raymand J. Hurley, board chairman, reported earnings of $1.06 per share for the first quarter, but indicated they probably would not be so high for the second quarter.

Hurley stated, however, that Thor will continue its aggressive sales policy "no matter what the future brings because we are convinced that this, and this alone, is the only assurance of success. With this as our policy, we plan to introduce one, and possibly two, new products before the year is out."

NEW COLEMAN PRESIDENT

Sheldon Coleman, executive vice president and general manager, The Coleman Company, Inc., is reported to have been named president of the Wichita, Kan., manufacturer of heating equipment. He succeeds his father, W. C. Coleman, who will continue as chairman of the board.

BURGGRABE HEADS RHEEM REFRIGERATOR DEVELOPMENT

Henry A. Burggrabe is reported to have joined Rheem Manufacturing Co., South Gate, Calif., to take charge of Rheem household gas refrigerator development. Burggrabe's past associations have been with F. L. Jacobs Co., Detroit, as assistant chief engineer on development of bottle vending machines; with Servel, Inc. on gas refrigeration unit and water heater development; and with Norge Division of Borg-Warner as a development engineer.

WESTINGHOUSE TO PRODUCE WATER COOLERS FOR ARMY

The Army's Quartermaster Corps has awarded a contract to Westinghouse Electric Corp., East Springfield, Mass., for water coolers. The contract calls for the delivery of 749 coolers with a 13-gallon capacity, and 88 with a 22-gallon capacity, for delivery to different military supply bases.

All the coolers will have stainless steel tops and will be of the hermetically sealed type, said H. F. Hildreth, manager of the company's refrigeration specialties department.

GAS, ELECTRIC RANGE SHIPMENTS CONTINUE HIGH

Industry shipments of domestic gas ranges totaled 1,067,200 units during the first four months of 1951 as compared with 877,100 units during the same period of 1950, an increase of 21.7%.

Latest figures on shipments of electric ranges cover the first three months of this year. During that period shipments totaled 478,500 units as compared with 413,900 units during the same period of 1950. Domestic gas range shipments during the same period for 1951 were 817,600 and for 1950 were 638,000. All figures are from a recent report by GAMA.

GENERAL CHEF EXPANSION

General Air Conditioning Corp., Los Angeles, manufacturers of General Chef range-refrigerator combinations and other refrigerators, has reported the completion of an extensive plant expansion program, including entirely new metal treating and paint finishing departments. Also, additional acreage adjacent to the plant has been acquired for further contemplated expansion of manufacturing facilities.

AUTOMATIC BURNER ACQUIRED BY NOMA

Henri Sadacca, president, Noma Electric Corp., New York, has announced the acquisition of Automatic Burner Corp., Chicago, producers of ABC oil burners. Sadacca stated that present plans call for the expansion of Automatic Burner which will be operated as a wholly-owned subsidiary.

Joseph Hearst, president of Automatic Burner, will continue in that position, and Jack Hearst will remain in office as vice president, it was indicated.

LOUDON ANNOUNCES NEW LINE OF HOME APPLIANCES

R. J. Loudon, president, Loudon Manufacturing & Sales, Inc., Minneapolis, has announced that his firm will introduce a new line of home appliances, including electric kitchen ranges, refrigerators, washing machines, water heaters, and an automatic ironer.

Loudon has been active for a number of years in the manufacture of domestic freezers, automatic ice cube makers and other commercial refrigeration equipment.

WEST COAST FIRM CHANGES NAME TO "NORRIS-THERMADOR"

Executives of Norris Stamping & Mfg. Co., Los Angeles, have announced that henceforth the organization, in joint title with its wholly-owned subsidiary, Thermador Electric Mfg. Co., will be known as Norris-Thermador Corp. The new simplified title more accurately rep-

resents joint activities of the firm, explained executives.

Kenneth T. Norris, president of Norris, said there will be no change in the financial structure of the organization. William E. Cranston, Thermador president, said that for the foreseeable future Thermador will continue to operate as a separate corporation.

Norris products include pressed metal plumbing ware, automobile wheels, and pressure cylinders. Thermador products include electric ranges, water heaters, air coolers; wall, ceiling and portable fan-type heaters; automobile coolers; small transformers and fractional horsepower motors.

Both companies are currently producing ammunition components for the government, and are negotiating for additional contracts, it was stated.

ELECTROPLATERS TO MEET IN BUFFALO, JULY 30-AUG. 2

The 38th annual convention of the American Electroplaters' Society will be held at the Statler Hotel, Buffalo, N. Y., July 30 through August 2.

The convention will be opened Monday morning, July 30, at which time Dr. William Blum, of the National Bureau of Standards, will deliver the keynote address entitled "*Electrodeposition Researches at the National Bureau of Standards.*"

The first technical session—"*Engineering Aspects of Electroplating*"—will be held Monday afternoon with G. W. Jernstedt, Westinghouse Electric Corp., acting as chairman.

Papers will include: "*Rinsing for Electroplating*" by R. J. Rominski and F. L. Clifton, General Motors Research Laboratories; "*Practical Application of Diaphragm Tanks in the Electroplating Industry*" by Ezra A. Blount, Products Finishing Magazine; "*Methods of Heating and Temperature Control of Plating Solutions*" by W. E. Stadel and C. Civan, George L. Nankervis Co.; "*Advantages of Simplicity in the Electroplating of Automobile Bumpers*" by Donald H. Schantz, Michigan Bumper Corp.

Tuesday morning session—"*Preparation and Plating of Zinc Base Diecastings*"—chairman, Dr. R. B. Saltonstall, The Udylite Corporation.

Program includes: "*The Shortest Way,*" a movie, courtesy Doehler-Jarvis Corp.; "*Requirements of Die Castings for Plating*" by Glenwood J. Beckwith, Metallon Products, Inc.; "*Mechanical Finishing of Die Castings*" by M. R. Caldwell, Doehler-Jarvis Corp.; "*Chemical and Electrochemical Preparation of Die Castings for Plating*" by Earl W. Arnold, L. H. Butcher Co.; "*Electroplating Zinc Base Die Castings*" by Chester G. Borlet, United Chromium, Inc.

Tuesday afternoon session—"*Open Forum on Substitute Finishes for Electroplating*"—*chairman*, Dr. Walter R. Meyer, Enthone, Inc.

Papers include: "*Phosphate Coatings*" by Alfred Douty, American Chemical Paint Co.; "*Chromate Treatments*" by Charles W. Ostrander, Allied Research Products, Inc.; "*Black Oxide Coatings*" by Dr. Walter R. Meyer, Enthone, Inc.; "*Clear and Pigmented Organic Coatings*" by Donald R. Meserve, Organic Coatings Division, United Chromium, Inc.; "*Rust Preventive Oils and Waxes*" by A. W. Ackerman, F. E. Anderson Oil Co.

Wednesday morning session—"*Some Practical Aspects of Plating Room Control*"—chairman, John Acheson, Canadian Hanson-Van Winkle Co., Ltd.

Papers include: "*The Evaluation of Quality of Electrodeposits*" by Carl Durbin, Chrysler Corporation; "*Operating Control for Optimum Plating Characteristics*" by R. O. Hull and J. B. Winters, R. O. Hull & Co.; "*Some Practical Considerations of Current Distribution*" by Dr. Ralph A. Schaefer and Harry Pochapsky, Cleveland Graphite Bronze Co.; "*Nickel Plating with Insoluble Anodes*" by Dr. W. A. Wesley, D. S. Carr and E. J. Roehl, The International Nickel Co., Inc.

Thursday morning session—"*Report on A.E.S. Research Program*"—chairman, Guy M. Cole, Ternstedt Division, General Motors Corp.

Papers include: "*A New Degreasing Evaluation Test—the Atomizer Test*" by Dr. Henry B. Linford, Columbia University; "*How the Plating Industry Will Benefit from Research on Metal Cleaning*" by E. T. Candee, Lea Manufacturing Co.; "*Highlights of the A.E.S. Research Program*" by Dr. Donald Price, Oakite Products, Inc.

NESCO DIRECTOR OF RESEARCH

Emmett Gardner, executive vice president, Nesco, Inc., announced the appointment of Lee Harris as director of research and development. Previously with the Sunbeam Corp. and Valley Manufacturing Co. of Chicago, Harris will be in charge of development and research of all new products and the redesign of present products.

TYLER FIXTURE ACQUIRES WILSON REFRIGERATION

Tyler Fixture Corp., Niles, Mich., manufacturers of home and farm freezers and commercial refrigerators, has announced the acquisition of the operating business of Wilson Refrigeration, Inc., Smyrna, Dela.

John Wilson, Jr., founder and president of Wilson, is now general manager of the Delaware company which will be operated as a division of Tyler Fixture. Wilson Refrigeration is a pioneer manufacturer of home freezers and milk coolers, and has also produced commercial refrigerators.

The acquisition of Wilson brings to four the number of Tyler operating units. In addition to its main plant at Niles, Tyler operates a manufacturing unit at Waxahachie, Texas, and a wholly-owned subsidiary, Harder Refrigerator Corp., Cobleskill, N.Y.

CORNELL NAMED GROUP EXECUTIVE FOR A. O. SMITH

F. S. Cornell, manager of A. O. Smith Corp.'s plant at Kankakee, Ill., has been appointed group executive for the Kankakee Works, Eastern Motor Division at Tipp City, Ohio, and the company's Heating Division in Toledo. Cornell will make his headquarters in Kankakee, and will

continue as manager of Kankakee Works.

The Kankakee plant manufactures domestic automatic storage water heaters, while the Toledo plant makes commercial water heaters, house heating boilers and gas conversion burners. Fractional and integral horsepower electric motors are made at Tipp City.

SINGLETON REJOINS FLORENCE

C. Fred Lucas, vice president-sales, Florence Stove Co., has announced the appointment of H. R. Singleton as manager of its midwest division, succeeding F. B. Jeremia, recently resigned. Singleton returns to the Florence organization after serving in executive sales capacities with A. J. Lindemann & Hoverson Co. and American Stove Co.

A veteran in the cooking and heating appliance industry, Singleton was a member of the Florence organization for nearly 23 years, and was assistant sales manager at the time of his resignation in January, 1949.

ESTATE STOVE UPS WEINMAN

Ned Weinman has been named market research manager, Estate Stove Co., according to announcement by Gordon P. Hentz, general sales manager. Weinman has been with Estate since 1933.

REES NAMED COOLERATOR V.P.

G. L. Rees, previously manager of sales for Gibson Refrigerator Co., has been elected a vice president and member of the board of The Coolerator Co., Duluth, it was announced by L. W. Hamper, Coolerator president and Gibson executive vice president, who added that Rees joined Coolerator as the first move of a major expansion program.

PABST SMITH EXPANSION

Pabst Smith Co., Inc., Long Island City, N. Y., which recently introduced a domestic 1-cu. ft. refrigerator, has announced the establishment of Douglas Equipment Co., Caldwell, N. J., as its branch assembly, warehousing, sales, and delivery branch,

TAKE TO THE AIR-

Overcome Those Production Problems Blocking YOUR Line

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POWER and FREE CONVEYORS

Proven through constant use in hundreds of manufacturing plants, Webb Materials Handling Conveyor Systems reduce costs and increase efficiency and productivity.

Power and Free Conveyors can be tailor-made to your requirements . . . to any plant large or small. They offer complete flexibility in meeting production problems. Some of their advantages include:

- Loads are *pushed*, rather than *carried*, on Webb "Power and Free Rail" conveyors.
- Manual or automatic switching of loads either from or to the main "Power" line.
- Loads may be lowered vertically from the "Power" line . . . anywhere along the route.
- Automatic dispatching of loads to distant points by presetting carriers for a given destination.
- Accumulation of loads for "banks" by gravity from "Power" line to "Free" line eliminates floor storage space waste.
- Momentary stopping of loads anywhere along the route, by disengaging "Free" trolleys from "Power" pushers.

Remember—You can depend upon Webb Engineering and cost-cutting Conveyor Equipment to solve your materials handling problems.

CONVEYOR ENGINEERS AND MANUFACTURERS

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OFFICES IN PRINCIPAL CITIES

serving retailers of northern New Jersey.

D. A. Solley, branch manager, said that the demand for the 1-cu. ft. refrigerator resulted in this branch operation to provide quick delivery to direct factory authorized dealers in the seaboard area.

SIGN ASSN. COMMITTEE TO WORK WITH NPA ON CMP

At the request of the National Production Authority, an Industry Advisory Committee is being appointed by the National Electric Sign Assoc. to discuss the problems of the industry under the Controlled Materials Plan. Aim of the committee will be to meet with NPA in an effort to work out ways and means to permit the highest possible level of civilian production and at the same time conserve necessary critical materials.

G-E PLANNING JET ENGINE PRODUCTION IN VERMONT

General Electric Co. announced that it has taken option to lease manufacturing space in Ludlow, Vermont as part of its currently expanded jet engine production program.

A company spokesman said the G. E. Aircraft Gas Turbine Divisions is seeking these facilities for "parts manufacturing operations, including die-sinking." The division already operates large facilities at Lynn, and Everett, Mass., and is establishing an aircraft jet engine and turbo-prop test, development and production center at Lockland, Ohio.

PEI QUALITY DEVELOPMENT COMMITTEE MEETS AT BUREAU OF STANDARDS

A meeting of the Porcelain Enamel Institute Quality Development Committee was held recently at the National Bureau of Standards, Washington, D. C. Under consideration by the Committee are a number of test methods and the necessary apparatus for conducting the tests.

Included in the program are a test for determination of nickel and a test for adherence of porcelain enamel to sheet metal (both have been completed and published), a revision of the "reflectance test," newly constructed torsion and abrasion testers, etc. The importance of torsion tests can be readily recognized when it is considered that two-thirds of all enamel field failures on stoves and refrigerators are said to be the result of torsion failures.

The Quality Development Committee is headed by Chairman G. H. Spencer-Strong, Pemco Corporation, Baltimore, Maryland.

DEVILBISS CUSTOMER SCHOOL HOUSED IN NEW BUILDING

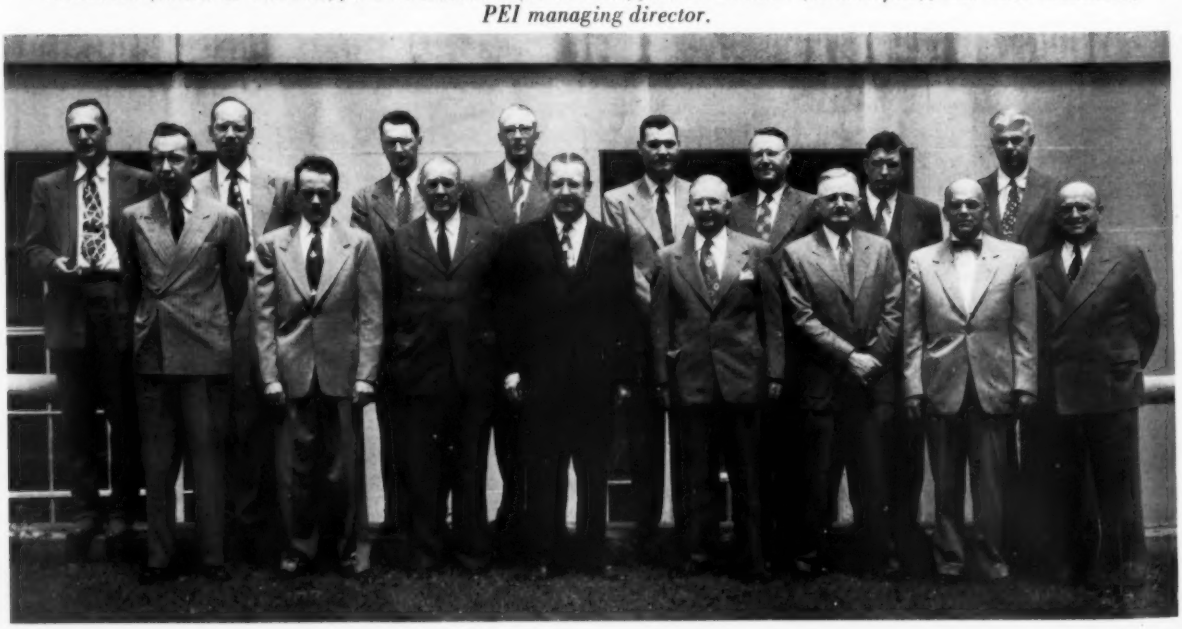
Emphasizing the importance of customer relations, The DeVilbiss Co., makers of spray equipment, has opened a new building housing a customer research department, display sales room, and customer school of spray finishing.

Located near the firm's Toledo plant, the new building covers an area of 10,000 square feet and offers customers laboratory and classroom facilities and the services of technicians, instructors and sales personnel.

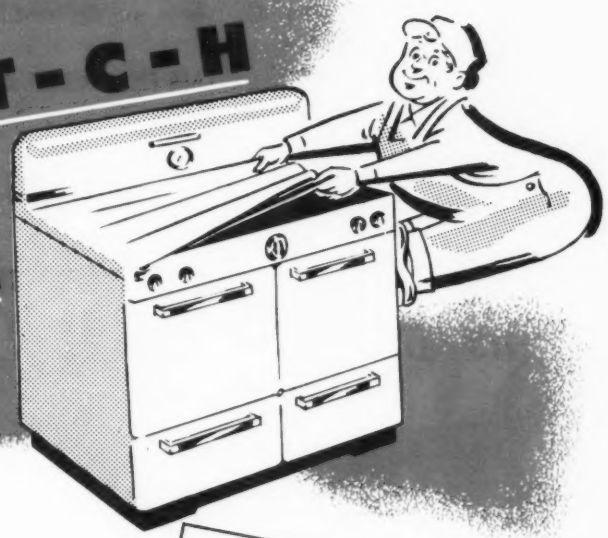
BESSEMER MEDAL TO FAIRLESS

Benjamin F. Fairless, president, U. S. Steel Corp., was awarded the Bessemer Medal for 1951 in recogni-

Attending PEI Quality Development Committee meeting were, left to right: Back row—D. G. Moore (Bur. of Stds.), E. E. Bryant (Ferro), W. J. Baldwin (Titanium Alloy), J. T. Roberts (Crane), E. C. Aydelott (Murray), J. J. Canfield (Armco), J. C. Richmond (Bur. of Stds.), R. L. Fellows (Chicago Vit.). Front row—H. B. Kirkpatrick (Bur. Stds.), Geo. Warren (PEI), E. E. Marbaker (Hommel), G. H. Spencer-Strong (Pemco), R. R. Danielson (Metal & Thermit), W. N. Harrison (Bur. Stds.), H. M. Brenner (Drakenfeld), and Edw. Mackasek, PEI managing director.



How to S-T-R-E-T-C-H YOUR PORCELAIN ENAMEL



New FRIT ALLOWS FULL PRODUCTION

Without Lowering Inspection Standards

The NPA order effective recently, sharply curtailed the use of cobalt oxide and nickel oxide. This means that lesser amounts of the ground coat frit formerly used are now available for non-defense purposes. However, a new *non-strategic* frit developed through years of research by the O. Hommel Company in conjunction with the fellowship at Mellon Institute makes possible full production without lowering inspection standards. Containing reduced percentages of cobalt and nickel oxides, this non-strategic frit has *all the desirable properties* of other frits. In fact, tests indicate the new frit is in some respects superior.

Non-strategic frits blend in any proportion with other standard frits, simplifying storage problems. It is important to note, also, that non-strategic frits do not require any special additions in the mill.

Let the O. Hommel Company sales and service engineers show you the results which can be obtained with this new frit.

Advantages OF NEW NON-STRATEGIC FRIT

- Normal Production
- Conformity To NPA
- Inspection Standards
- Regular Application
- No Mill Additions
- Blending Ability
- Standard Firing
- Wide Firing Range

THE O. HOMMEL CO. PITTSBURGH 30, PA.

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POTTERY • STEEL AND CAST IRON FRIT
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tion of his services to the iron and steel industry. Presentation was made in behalf of the British Iron and Steel Institute by Sir Charles Goodeve at the 59th general meeting of the American Iron and Steel Institute in New York recently.

EMPLOYEE IDEA EARNS $2185

John R. Davis, employee of General Electric's Erie Works Refrigerator Division, has received $2185, highest single award made by G. E. in 1950 for a suggestion. Davis' idea eliminated a subassembly operation in the manufacture of refrigerators. Philip W. Robinson, of the same division, won the second highest award.

TAM FELLOWSHIP AWARDED

Titanium Alloy Manufacturing Division's fellowship in ceramic engineering at the University of Illinois will be held during 1951-52 by Irvin J. McKeand, Nashville, Tenn. McKeand received the degree of Bachelor of Science in Naval Science from the U. S. Naval Academy in 1945 and a Bachelor of Science degree in Ceramic Engineering from Virginia Polytechnic Institute in 1951. At the University of Illinois he will work toward the degree of Master of Science in Ceramic Engineering.

Titanium Alloy is a division of National Lead Co.

"KOCH REFRIGERATORS, INC."

The name "Koch Refrigerators, Inc." is now the new designation for Koch Refrigerators, a Division of Koch Butchers' Supply Co., of North Kansas City, Mo.

Millard Mayer, president, in announcing the name change, stated that the firm's entire facilities have been devoted to the manufacture of refrigerated cabinets and display cases since January 1, 1950. The shifting of sales volume away from butcher supplies to refrigeration, keeping pace with the development of modern refrigeration, has led the company to this logical change in policy and name, it was added.

BETTINGER ENAMEL PRESIDENT GETS ARCHITECTS AWARD

Robert A. Weaver Jr., president, Bettinger Enamel Corp., was presented the Award of Exceptional Merit in Class III of the 1951 Building Products Literature Competition at the annual convention of the American Institute of Architects in Chicago recently.

The award was made for Bettinger's promotional booklet, "The Drawingboard and the Flame," pointing up the great improvements made in the design of architectural porcelain enamel during the past few years.

NELSON COOK RECEIVES ANNUAL GALVANIZERS AWARD

Nelson E. Cook, general superintendent of galvanizing, Wheeling Steel Corp., has been awarded the 1950 Award of The Galvanizers' Committee, sponsored by the American Zinc Institute. Cook is the son of the late

as simple as **A·B·C**

These components for the completely enclosed pipe-line type FerroFilter shows its simplicity of design. Simplified design, careful workmanship, and the finest materials are combined in an extremely effective electromagnetic separator that will give you long, trouble-free service.

To get the clean sparkling enamel finishes you want for your finished product, you *must* have clean, iron free enamel slips. Thousands of feet of magnetized edges of the FerroFilter grids form a protective wall against iron contamination.

The pipe-line FerroFilter will fit into your dip tank circulating system, and your mill unloading or liquid transfer systems to give you the protection you need. Gravity type FerroFilters are available for general use where a closed system is not required.

No modern enameling plant can afford to operate without adequate FerroFilter protection. They represent the lowest cost finish insurance you can buy.

For detailed information send for bulletin #54

Authorized Representatives for the Enameling Industry

Chicago Vitreous Enamel Product Co., 1425 So. 55th Court, Cicero 50, Ill.
Ferro Enamel Corporation, 4150 East 56th Street, Cleveland 5, Ohio

S. G. FRANTZ CO., Inc. Dept. F P.O. Box 1138 Trenton 6, New Jersey

William J. Cook, pioneer in galvanizing processes and known throughout the industry as "dean of galvanizers."

COMPLETE REPORT ON DEFENSE USE OF ENAMELING FURNACES

PEI committee suggests uses for stamping presses, pickling equipment and high temperature furnaces

Prompted by growing evidence that the demand for new industrial furnaces needed for heat treatment of aluminum and steel defense items is moving beyond the capacity of the producers of such equipment, the Government Business Committee of the Porcelain Enamel Institute has compiled a comprehensive report of defense work possibilities for porcelain enameling furnaces.

According to E. W. Dany, chairman of the subcommittee making the survey, the project was undertaken to assist PEI members in converting their porcelain enameling furnaces to defense work and to suggest specific defense applications. An inventory of available furnaces also was made.

The Committee reports that there are approximately 350 batch-type and 250 continuous monorail-type enameling furnaces in the U. S. A. All enameling plants also have pickling facilities—a fact the Committee considers to be of equal importance to the furnace in some heat treating operations, i.e. removal of scale to prolong die life.

According to the PEI Committee, batch-type furnaces could be used for annealing and hardening of various steel products with a minimum of furnace changes. The report outlines the proper conversion procedure as well as additional changes needed for heat treatment of aluminum. Several specific conversion and heat treatment projects accomplished during World War II are described.

The PEI report also outlines conversion procedure for continuous monorail-type enameling furnaces and describes the actual use of these furnaces for heat treatment of 14-foot lengths of armor plate, bombs, and steel cartridge cases. It is pointed out that most porcelain enamel plants have press equipment which could be utilized in the stamping of steel defense items, and that in many other cases individual plant facilities will enable production operations in conjunction with heat treating.

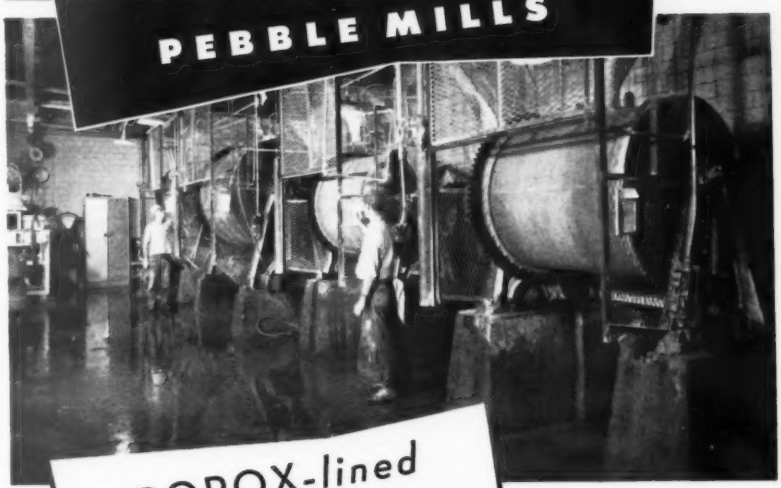
The Committee estimates that utilizing only half the furnaces in the porcelain enamel industry for heat treating would result in a daily output of approximately 36,000,000 pounds.

ARMOUR RESEARCH APPTS.

Dr. William A. Scholes and Harold N. Barr, ceramic engineers from Fairchild Engine and Airplane Corp., Oak Ridge, Tenn., have joined the ceramics and minerals department at Armour Research Foundation of Illinois Institute of Technology, according to

Patterson

PEBBLE MILLS



POROX-lined

...for finer enamel grinding!

Snow-white, hard and tough POROX Grinding Balls and Mill Lining Blocks carry out the *finer grinding* of PATTERSON MILLS with no product contamination . . . your ideal combination for finest enamel production.

Richard L. Conway, President

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The Patterson Foundry and Machine Company, (Canada) Limited
Toronto, Canada
MONTREAL

Dr. Einar P. Flint, department chairman.

At the Foundation, Dr. Scholes will study development of refractory container materials suitable for melting titanium and its alloys, while Barr will study pressing materials in heated molds.

SOUTH AMERICANS ATTEND MIDWEST ENAMELERS OUTING

finishfoto

Among the 170 persons attending the annual Maypole Party of the Midwest Enamelers Club, May 18, were two men from the firm of Metalurgica Wallig S. A., of Porto Alegre, Brazil. They attended the annual golfing outing and dinner, held at Sportsman Golf Club, Chicago, as guests of Club members from Florence Stove Co., Kankakee, Ill.

Shown in the photo, left to right, are: Ray Kanoski and Goldman Nelson (Florence Stove), Humberto Farias and Gerno A. Enck (Metalurgica Wallig), and F. A. Petersen (University of Illinois), Club president.

NORTON $6,000,000 EXPANSION

Milton P. Higgins, president, Norton Company, Worcester, Mass., recently announced a $6,000,000 expansion plan to increase the firm's capacity to make grinding and lapping machines in order to meet the demands of the present defense effort.

Plans call for a new 740 x 300-foot factory and adjoining 360 x 100-foot office building of single-story construction, expected to enlarge the firm's machine tool manufacture by 50 to 60 per cent.

Everett M. Hicks, manager of the grinding machine division, said Certificates of Necessity have already been granted by the Defense Production Administration covering the project.

WESTINGHOUSE INDUSTRIAL PRODUCTS SALES APPT.

Thomas R. Lawson has been named assistant sales manager of industrial products, Westinghouse Electric Corp., it was announced by W. W. Sproul, sales manager. With the com-

NEED BURNING TOOLS FOR DEFENSE PRODUCTION?

FAHRALLOY HAS THE ANSWER!

If you are converting for the mobilization program consult Fahralloy for your burning tool needs. We may have the exact patterns for your needs. If the job requires SPECIAL application FAHRALLOY engineers will quickly and inexpensively design it for you. Either way you'll be getting the finest burning tools possible; tools that mean higher thermal stress protection with correct chromium and nickel analysis . . . practically no weight loss, breakage or warpage . . . minimum bearing area and proper suspension whatever the parts to be enameled. Send today for FAHRALLOY Catalog 48 or write for direct consultation with FAHRALLOY engineers.

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RESISTS HEAT AND CORROSION!

Guaranteed Results
in the
Pickle Room
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Specification Materials
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MANUFACTURERS OF LEPCO PRODUCTS

Suppliers to Porcelain Enameling Plants
CLEANERS • NEUTRALIZERS
DRAWING COMPOUNDS

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pany since 1928, Lawson will headquarter in Pittsburgh. His duties will include coordination of industrial products, defense planning, and new product planning from the commercial standpoint.

PACIFIC COAST ENAMELERS MEET

The third 1951 meeting of the Pacific Coast Enamelers' Club was held on June 8, with about 60 members present. During the business session, plans were discussed for participating in the forthcoming regional meeting of the American Ceramic Society at Long Beach, Calif. October 26 of the three-day meeting has been set aside for activities of the Pacific Coast club. Several members have been requested to prepare technical papers to read before the Society.

M. E. BLACKBURN DIES

The enameling industry lost a veteran on May 19 when M. E. "Bub" Blackburn passed away at his home in Los Angeles, California. "Bub" Blackburn, 60, was a victim of a heart ailment that kept him on the sick-list for the past two years.

Prior to ill health, he was superintendent for California Metal Enameling Co., a company he started to work for when he came from the Mullins Mfg. Co., Salem, Ohio, in 1936. Prior to his association with Mullins, he had been in the enameling business with his father at Bellaire, Ohio.

Blackburn was a past president of the Pacific Coast Enamelers Club and labored industriously to get that organization started. A brother, C. A. Blackburn, is vice president of Perfection Stove Co., Cleveland, Ohio.

NEW PROCESS D-ENAMELING MOVES TO LARGER FACILITIES

Arthur M. Lander, president, New Process D-Enameling Corp., Chicago, announced that his firm has opened a larger plant in Aurora, Illinois. Pilot plant facilities in Chicago, Lander said, became inadequate to process the volume of de-enameling work which the firm is called upon to perform.

The Aurora plant provides about

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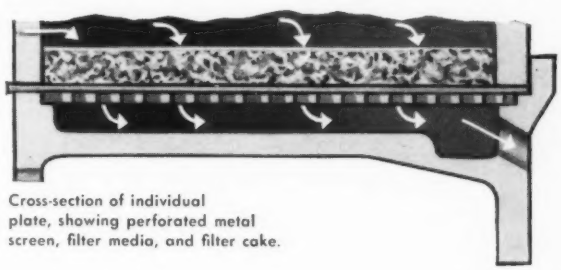
FREE DRAINAGE IN SPARKLER FILTERS



Cross-section of individual plate, showing perforated metal screen, filter media, and filter cake.

High flow rates cannot be assured by large filtering surfaces *alone.* Another important factor is provision for drain-off space capable of carrying away all liquid that the surfaces can handle.

In Sparkler filters, the Free Drainage design of Sparkler horizontal plates eliminates one of the primary causes of liquid flow frictions — providing a clear, unobstructed channel through which filtered liquid can drain rapidly and more completely. To accomplish this, Sparkler uses a series of smooth, widely spaced buttons as the means of supporting the filtering surface, thereby ending the need for heavy wire mesh or other types of media support that have high coefficients of friction.

Features such as these, hidden from the eye, are typical of standard Sparkler construction, and are responsible for Sparkler superiority. Coupled with highest quality, operational economy, and simplified maintenance, free drainage makes Sparkler filters ideal for every filtering need and makes them particularly well adapted to the filtration of viscous liquids.

SPARKLER horizontal plate FILTERS

Available in a complete range of sizes and materials.

Write for your copy of our new catalog.

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Sparkler representatives in all principal cities.

SPARKLER FILTERS · SPARKLER FILTERS

30,000 square feet of floor space, plus two additional buildings which will be used for warehouse space. The plant will be served by a railroad.

DETREX NAMES LUCAS TO WESTERN FIELD STAFF

William F. Lucas has been appointed assistant to E. H. Ehlert, western region manager of Detrex Corporation, Detroit.

Lucas will headquarter in the Chicago office, 600 S. Michigan Ave., and will supervise the technical applications and field servicing on the company's phosphate-type rust-proofing compounds, and alkaline and emulsion cleaners, in Wisconsin and northern Illinois.

FRIT MANUFACTURERS SPONSOR SECOND SUCCESSFUL COOPERATIVE EXHIBIT AT STOVE MEETING

A small section of a group of stove men visiting the exhibit.

Four leading manufacturers of porcelain enamel frit cooperated in presenting a constructive exhibit for modern porcelain enamel at the recent Institute of Cooking and Heating Manufacturers' meeting in Cincinnati. This is the second year that this cooperative exhibit has been sponsored by Chicago Vitreous Enamel Product Co., Ferro Enamel Corp., Ingram-Richardson, Inc., and Pemco Corporation. The committee sponsoring the cooperative effort was headed by Howard N. Williams, of Pemco, who also headed the "welcoming group" as stove men visited the exhibit.

Each frit manufacturer had representatives at the exhibit, so that there were experienced men on the floor at all times to discuss finishes and finishing problems with visitors. Manning the booth were Glenn Hutt and Carl Reiff, Ferro; John Hurd and H. A. Moyer, Ing-Rich; A. B. Friedmann and Lou Adams, Chicago Vit; John Oliver, Porcelain Enamel Institute; and Howard Williams.

Through the use of door prizes and originality in "show" technique (see photo on page 42), records indicate that a high percentage of those attending the stove convention visited the booth one or more times during the meeting. (Last year's records showed a 94% attendance.)

The exhibit itself was designed to sell modern porcelain enamel as a finish, and twice daily, when crowds were gathered for the awarding of prizes, brief but pertinent facts pertaining to porcelain enamel were presented by Mr. Williams.

PATTERSON FOUNDRY OPENS BALTIMORE OFFICE

The Patterson Foundry & Machine Co., East Liverpool, Ohio, has established a Baltimore office, at 1605 Court Square Building, it was announced by Richard L. Cawood, president. Patrick Dolan, sales engineer, has been named district manager of the new office.

H. G. WOLFRAM DIES

H. G. Wolfram, well known in the field of porcelain enameling, died May 21. He was a former vice president of Pemco Corp., and more recently did research work with the Edward Orton Jr. Ceramic Foundation, Department of Ceramic Engineering at Ohio State University.

SWEELY RESIGNS, HOWE NAMED CHI VIT RESEARCH DIRECTOR

B. T. "Burt" Sweely, vice president in charge of research, Chicago Vitreous Enamel Product Co., has resigned, according to William Hogenson, president. Sweely, who is well known throughout the enameling industry, is planning semi-retirement, but will still be available to Chi Vit on a consulting basis.

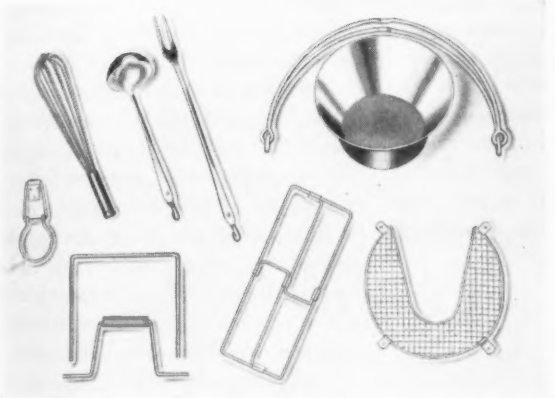
B. T. SWEELY

At the same time, Hogenson announced the appointment of E. E. "Gene" Howe as director of research. Howe joined the company as a ceramic engineer in 1934. In 1942 he was named chief metallurgist, and in 1946, assistant director of research.

More News . . . Page 84→

WIRE FORMS & ASSEMBLIES

Stampings • Metal Fabrications



Facilities for *DEFENSE WORK*

- Automatic Wire Forming
- Wire Rings—full range
- Eye Wires—formed, welded, special shape
- Wire Assemblies—baskets, dish drainers, strainers
- Welding—butt, multiple spot—torch welding
- Roll threading—machine threads, lag threads, special knurling
- Stampings—blank and forming dies, hydraulic presses, wire flattening and bending
- Finishing—all metal finishes, rubber and plastic coating

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Mark-Time timing devices are designed, engineered, and manufactured by a skilled team of engineers and craftsmen. They include spring operated bell timers, time switches, and combinations of both, designed to meet all specifications and requirements where audible bell signal or electrical circuit breaking is required at the end of a time cycle.

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Tell me (without obligation on my part) about Oakite methods and materials for the following jobs:

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- ☐ Steam-gun cleaning
- ☐ Barrel cleaning
- ☐ Burnishing
- ☐ Rust prevention
- ☐ Send me a FREE copy of your booklet *"Some good things to know about Metal Cleaning."*

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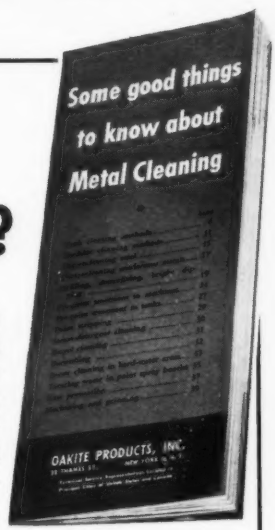
Listed here are some of the operations discussed in Oakite's new 44-page illustrated booklet on Metal Cleaning. Please check the list. Then let us show you how Oakite materials and methods can give you better production with greater economy.



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The steel outlook . . .

→ *from Page 33*

products was in excess of the supply for a period of over six months, and with the short interruption in 1949, this present situation has lasted for over five years.

This steel shortage that has existed has been caused by very abnormal conditions. The first extreme demand was brought about by the fact that consumers' durable goods had not been manufactured for a period of approximately five years during World War II, and this pent-up demand took approximately three years to satisfy, and showed signs of being pretty well taken care of by the first of 1949. Then when things became pretty well leveled off, the threat of the steel strike, and the actual steel strike took place, caused another artificial demand which also was responsible for cutting the production of steel very materially during 1949.

Just as it began to look as though we were coming out of the effects of the steel strike, the Korean War appeared on the horizon and created considerable scare and advance buying. During the first quarter of this year, a great many consumers purchased consumers' durable goods because they feared both shortages and necessary substitution of materials used for major parts due to government restrictions in consumption.

When and if the consumer becomes confident that he will be able to purchase the automobiles or appliances when he needs them, I believe it will have a psychological effect in reducing the overall demand considerably.

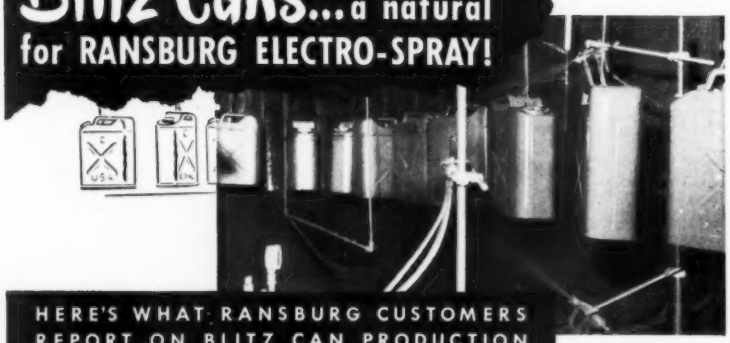
In 1950, in spite of all the shortages that were complained of, the electric refrigerator manufacturers produced about 2½ times the number of units they manufactured in 1940, as did the electric range manufacturers, and the washing machine manufacturers almost tripled their 1940 production.

Percentagewise, the automobile producers didn't do quite as well but they still manufactured close to twice the cars and trucks that were made in 1940, and made an all-time production record. The majority of manufacturers of home appliances and automobiles during the first five months of 1951 manufactured at practical capacity even where sales didn't justify that rate of production, anticipating restrictions during the last half of the year, and, feeling confident that during the last half of 1951, there would be sufficient demand for their product to liquidate any excessive inventory.

As an example of this, during the first five months of 1951, the automobile companies manufactured 3,266,860 passenger cars and trucks in the United States, excluding Canada, compared with production of 2,911,245 cars in the all-time record year of 1950, or an increase of a little over 10 per cent, and at a time when the demand for automobiles has very definitely lessened.

It has been estimated that the inventory of radios and televisions is 200 per cent greater than last year at this time, and an increase of 90%

Blitz Cans... a natural for RANSBURG ELECTRO-SPRAY!



HERE'S WHAT RANSBURG CUSTOMERS REPORT ON BLITZ CAN PRODUCTION

One plant runs a line at 18 fpm, producing 12,000 to 13,000 cans a day. Paint saving amounts to 2½¢ per can over former hand-spray method. Doesn't sound impressive in pennies, but total saving per month amounts to $6,000! And, spray labor costs are reduced, accounting for another monthly savings of $2,500.

Another Ransburg customer reports paint savings of well over 50% of amount used by hand-spray methods in World War II days. Labor requirements are reduced substantially. And, cans are more uniformly coated, giving added protection against rust and corrosion.

Another RANSBURG ELECTRO-SPRAY user produces 5,000 Blitz Cans a day and reports 160 units per gallon!

In Defense Work—as in civilian production—RANSBURG ELECTRO-SPRAY consistently cuts costs . . . increases production . . . improves quality.

Why not let Ransburg engineers analyze your paint requirements? Write or call.

Electrostatic Painting Processes

RANSBURG ELECTRO-COATING CORP.

Indianapolis 7, Indiana

RANSBURG

in inventories on other durable goods.

There has been a great deal of talk about rural electrification greatly increasing the demand for household appliances; however, the 1950 Census Report showed that 94% of the homes in the United States had electricity compared with 79% in 1940, so we cannot plan on a greatly increased demand due to additional homes obtaining electric power.

It is predicted that there will be 40% less new homes started in 1951 than in 1950, which also is bound to reduce the demand for household appliances.

The way Washington intends to divide the finished steel products for 1951 is . . . 7 million tons for military, 22 million tons for defense supporting, and 51 million tons for all other users, or a total of 80 million tons. In 1952 they expect to allocate 12 million tons for military, 21 million tons for defense supporting, and 51 million tons for all others, or a total of 84 million tons.

In accordance with the present planning, the maximum requirement of steel for military use will be reached in 1952, which is 12 million tons. This can be provided and still furnish the same tonnage for all other uses that was consumed in the record civilian production year—1950.

The largest figure I have seen or heard of from anyone for military requirements is 20 per cent of the production, or approximately 16 million tons of finished steel products, which would still allow very close to the same tonnage for civilian requirements that was consumed in 1950.

Enough steel to meet current demands by early '52

All products listed under defense supporting and others; in other words, excluding direct military, are made by industries that we are furnishing steel to in normal times, although in a few cases where we have an extensive defense program, such as at present, it is necessary to provide a little more tonnage for certain products, such as locomotives, railroad cars, farm implements, etc.

At the present time we are unable to meet the requirements of the majority of our customers which is general in the industry, and I believe this condition will exist pretty well through the fourth quarter. However, I predict that by the first of 1952 there will be enough steel to meet the current demands, and I would not be a bit surprised if this condition came about at an earlier date.

Needless to say, everything I have said is based upon our country not being involved in an all-out war.

Certainly the most significant aspect of the postwar era has been the amazing production record of American industry. This country has been able to bring its standard of living to an unprecedented high level while at the same time supplying material, money and resources to help other parts of the world. I believe the steel industry has contributed its full share to this wonderful record and will continue to grow with the needs of the country in the years to come.

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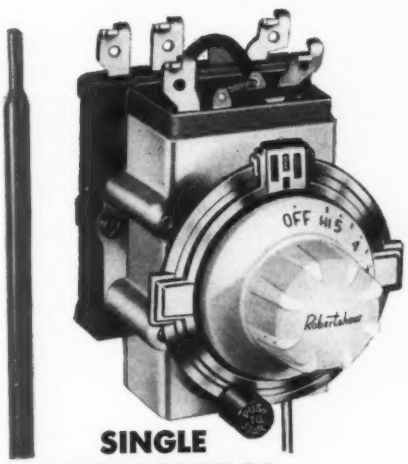
AUTOMATICALLY REGULATES DRYING CYCLE BY

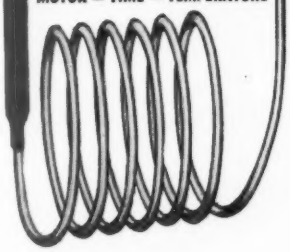
AMOUNT OF LOAD AND

MOISTURE CONTENT

TO PRODUCE DESIRED DEGREE OF DRYNESS EVERY TIME



SINGLE UNIT CONTROL OF MOTOR — TIME — TEMPERATURE



All the user does is set the dial and push the starter button. The control then takes over—and here's what happens, *automatically:*

1. Both the heater and the motor are energized
2. Amount of moisture and weight of clothes scientifically determine length of time dryer operates
3. Control cuts heat switch when correct internal temperature is reached, but —
4. Motor continues to run until all stored heat in drying chamber has been utilized
5. Control economical to install. Write for information.

In Home and Industry, *EVERYTHING'S UNDER CONTROL*

Robertshaw

THERMOSTAT DIVISION
ROBERTSHAW-FULTON CONTROLS COMPANY
YOUNGWOOD, PENNSYLVANIA

Durable goods outlook

→ *from Page 40*

ahead of output itself. The rising utilization of capacity for military purposes in the last quarter of 1951 may thus have somewhat more of an impact on consumer goods—perhaps $3 billion—$4 billion more—than would be indicated by the rising rate of spending. At the same time, plant and equipment expenditures of business should increase about $3 billion (annual rate) between the first and fourth quarters of 1951.

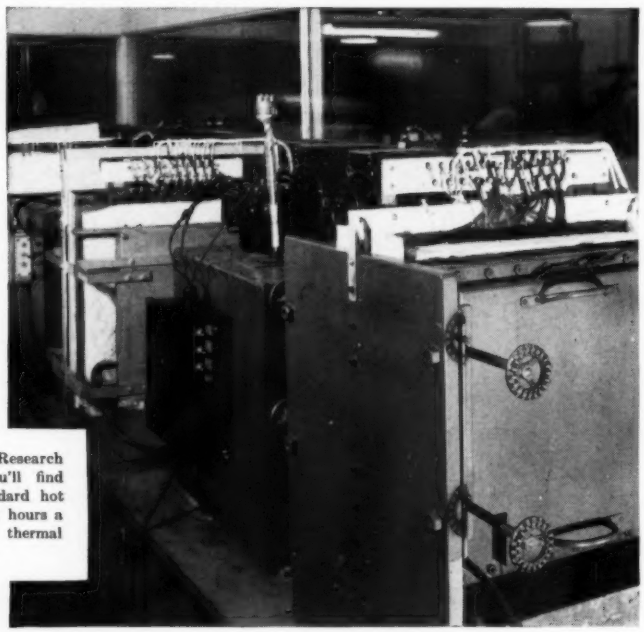
"Casting these up, the additional claim of the military effort (including the expansion of productive capacity) on output may run in the neighborhood of $25 billion (annual rate, in first-quarter, 1951, prices). The increase would amount to about 8% of total output in the first quarter, and about 12% of personal consumption expenditures. Assuming all the increase were to be in goods rather than services, it would represent about 18% of personal consumption expenditures for durable and non-durable goods in first quarter.

"But it's important to note that during the last quarter the total drain on output by civilian, business and government sources was considerably less than total output. During the first quarter business inventories were rising at an annual rate of about $8 billion (in average first-quarter prices). If inventories were only to remain constant in our hypothetical fourth quarter (and that seems conservative; it might be more realistic to assume they would be falling) the cutback of total consumption expenditures need be only about 8% rather than 12%. Again, assuming that all of the loss would be in goods rather than services, the cutback of consumer goods need amount to only about 15% rather than 18%.

"A liquidation of $4 billion in inventories during the quarter would apparently eliminate the necessity for any reduction in consumption expenditures. And all this assumes no increase in total output between the first and fourth quarters of 1951. With no liquidation of inventory, an advance of 5% in output would apparently restore the consumer to his enviable position of the first quarter.

"There are, of course, a number of qualifications to this argument. In the first place, military demand for materials is not distributed in the same way as civilian demand. Whether or not total output is adequate to supply the aggregate demands of government, business and the consumer, there will almost certainly be a severe setback in hard goods.

"The dimensions of this cutback are hard to find in the absence of a breakdown of planned procurement for the fourth quarter. But the projected rate of expenditures suggests an increase of about 30% in the share of steel output going to direct military needs. Together with increased military demand for aluminum and copper, the growth of procurement in the next six months could cut the flow of consumer durables by as much as 40% below first-quarter



At the Fiberglas Research Laboratories, you'll find these three standard hot plates in use 24 hours a day measuring thermal conductivity.

We call this our "customer holder"

Because we at Fiberglas like to hold on to our customers, we have equipment like that shown in the picture. And some very demanding people to operate it.

What it does is test the thermal conductivity of Fiberglas Insulation samples taken from the regular production lines . . . to make sure that the insulation you get from us will measure up to the standards you and we together demand of it.

By gearing our quality and output to your needs, we try to become a part of your production line . . . to deliver, on schedule, Fiberglas Insulation that meets your exacting requirements.

The wide use of Fiberglas Insulations by the home appliance industry is evidence that this policy has served you effectively. Meanwhile, continuous growth in public acceptance has made Fiberglas Insulation more than ever a good feature to have . . . a good feature to sell. Owens-Corning Fiberglas Corporation, Department 109-G, Toledo 1, Ohio.

OWENS-CORNING FIBERGLAS

*FIBERGLAS is the trade-mark (Reg. U.S. Pat. Off.) of Owens-Corning Fiberglas Corporation for products made of or with glass fibers.

FIBERGLAS IS IN YOUR LIFE...FOR GOOD!

levels. That would seem to be the outside measure. Significant expansion of basic metals capacity between now and the fourth quarter could moderate the size of the cutback considerably. . . .

Consumer goods supply 4th quarter vs. 1st quarter

"In general, however, *the aggregate supply of consumer goods in the fourth quarter is not likely to fall very far short of the first-quarter figure.* But that does not necessarily imply a continuance of the present slack in the consumer markets. Barring an extraordinarily sharp rise in individual tax rates—much sharper than is now being discussed in Congress — disposable income in the fourth quarter may well be running far in excess of the $215 billion first-quarter rate. With prices frozen at first-quarter levels, that would mean a substantial increase in real purchasing power in the face of a decline in the supply of consumer goods and services.

"In spite of the current dullness of the retail markets, it is still hard to believe that over the next six months the consumer will voluntarily allow his savings rate to rise to the levels that may be required to maintain an orderly consumer goods market by the fourth quarter. Unless the income is taxed away; unless the flow of wage income is kept within reasonable bounds; and unless the consumer can be convinced of the personal and national desirability of saving — the rise in disposal income and the resulting competition for goods must exert a steady inflationary pressure on the general price level, and could give the consumer sector all the earmarks of scarcity even though aggregate supplies continue at satisfactory levels. . . .

Outlook for remainder of '51

"To summarize the present outlook for the remainder of 1951 a moderate upward trend is suggested in total business activity, including both dollar volume and physical output. That seems more or less assured by the projected increase in defense procurement and capital expenditures by business, even though redistribution of materials in the third and increasingly in the fourth quarter may partially offset the rise for a time.

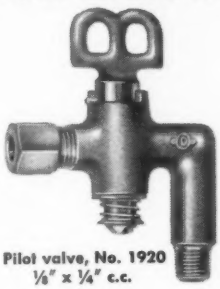
"Exactly when this uptrend will emerge out of the present sideways movement depends largely on the behavior of the consumer in coming months. *It seems quite possible now that third-quarter output of consumer goods under announced controls will equal or exceed current consumer demand.* Unless demand revives considerably, 'softness' could continue well into the third quarter, particularly in view of the present condition of inventories. Thereafter, the growth of real income should result in a moderate but steady inflationary pressure. The pressure could be multiplied by any significant downward adjustment of the price level."

From an address before the 19th annual convention of the Institute of Cooking and Heating Appliance Manufacturers, June 5, 1951, Cincinnati, Ohio.

VALVES
For The GAS HEATING INDUSTRY

Main shut-off valve, No. 2,000
Sizes: ½", ¾", 1", 1¼", 1½".

For...Furnaces...Conversion Burners...All Heating Equipment



Pilot valve, No. 1920
⅛" x ¼" c.c.

Pilot valve, No. 1910
⅛" x ¼" c.c.

These are only two of the complete line of pilot valves currently being supplied to the industry.

Continued expansion of the Gas Heating Industry will be dependent in part on the maintenance of the present high level of customer satisfaction. That's where valves come in —valves that can be depended upon to withstand torque and abuse—valves that won't talk back to you through customer complaints—valves designed to assure satisfaction for the life of the equipment.

These are some of the advantages gained when "Detroit Brass" valves are specified. Detroit Brass Valves are produced from highest quality brass, strongly constructed and A. G. A. approved. Produced by a pioneer company in the gas valve field, they bring to the user the advantage of long experience in research, engineering and field testing. They spell satisfaction to you and your customers.

Gas Appliance Fittings produced by Detroit Brass & Malleable Works include a complete line of valves for ranges, water heaters, space heaters, furnaces and all other types of gas equipment.

GAS VALVE DIVISION
DETROIT BRASS & MALLEABLE WORKS
DETROIT 9, MICHIGAN

Flow coating . . .

→ *from Page 28*

lose only about 45 to 50 gallons of solvent during 16 hours of operation, during which 28,000 square feet of surface area is coated.

Then, too, we shut off the machine over an entire week-end, and start it up again on a Monday morning with no cleaning whatever. We do clean the system completely about every four weeks. As can be readily seen, it takes a properly formulated material to stand up under this treatment.

We have found that a coating of .3 mil thickness is entirely adequate. It gives us a good, smooth finish, and our tests, including a 150-hour salt spray test, show it to be every bit as good as a much heavier coat applied by our former method. Alkali resistance is much improved, as is humidity resistance.

It should be added that in a flow coat operation, large objects can be covered with a relatively small volume of paint in the system. Whereas a dip tank large enough to handle our larger pieces would require approximately 600 gallons of paint, we can now operate with as little as 50 to 60 gallons in the system. This, of course, reduces inventory investment, material losses and the fire hazard.

As will readily be judged by those reading these comments, the flow coating system has proved very satisfactory for the application of primer coat to both steel and aluminum parts for our dishwasher line.

"ONCLE THUD SEZ *VEDOC* DEFENSE PAINT IS JEST ABOUT OUR BEST PROTECTION"

Uncle Thud's been getting around lately, for it's true. You just can't beat VEDOC Defense Paint for a good protective finish.

With our World War II experience to draw from, our research staff has been busy finding new and improved ways to give you the very best in government specification finishes . . . finishes that work best with your own coating methods. And we've expanded our production facilities to serve you quicker . . . more efficiently.

Whether your orders are for gallons or drums, each one receives the same prompt and thoughtful attention that has helped Ferro build a reputation as a good, dependable source of supply.

When you bid on Defense Orders calling for specification finishes, let us help you. Write to Ferro for quotations and assistance on any Defense Paint problems.

Remember, Ferro is set up to provide Complete Organic Coatings Service. From the development of diversified protective coatings—to the designing and installing of efficient finishing oven systems.

FERRO ENAMEL CORPORATION
LIQUID PLASTICS DIVISION
4150 East 56th Street · Cleveland 5, Ohio

Vedoc

Industrial literature

710. Free illustrated booklet on float packaging

Constructive information on proper methods of "interior packaging," and for information on bracing and blocking, flotation packaging, and surface protection, are contained in a free illustrated booklet.

711. Vapor degreasing handbook

A new 21-page handbook, on vapor degreasing of metal parts, answers most questions generally asked about vapor degreasing, completely covering the subject of what vapor degreasing is and to what types of materials and manufacturing vapor degreasing can be applied. Numerous photographs of various types of units along with useful data charts are also included.

712. Bulletin on use and application of heat-resistant enamels

A newly-published bulletin contains information on high temperature enamel frits suitable for many items now being made in critical materials. Included is information on types of high temperature ceramic coatings, metal fabrication and cleaning, enamel preparation and application, and firing temperatures.

It is stated that a fertile field for high temperature coatings of this type is in systems in contact with exhaust gases from combustion processes; for example, furnace flues, heat exchang-

ers, exhaust pipes and mufflers for internal combustion engines, etc.

713. "How to Obtain a Grade I (or equivalent) Finish on Steel"

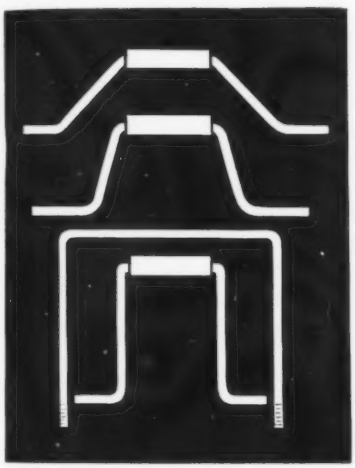
A new publication, "How to Obtain a Grade I (or equivalent) Finish on Steel", is of interest to manufacturers of ordnance items now requiring a special protective coating in addition to the paint finish.

The finish described in the new publication is zinc phosphate coating, and can be used to obtain a finish meeting Government Specification JAN-C-490. Information includes ordnance applications; equipment notes; cleaning of steel; spray, dip and brush application processes; heat requirements; coating times; and chemicals required for bath make-up.

New Supplies and Equipment

G-10. Ammunition box hardware

Government-approved steel handles for U-bolts can now be supplied for wood and steel ammunition boxes



from a manufacturer who is now converting a large share of production facilities to the manufacture of wire and steel items required for the defense program. The company is presently producing the three styles of handles shown, and other styles and sizes can be made to specifications. U-bolts are available with or without wing nuts, in various lengths and widths.

More Information

For more information on new supplies, equipment and literature reviewed here, fill out the order form on page 64, or write to us on your company stationery.

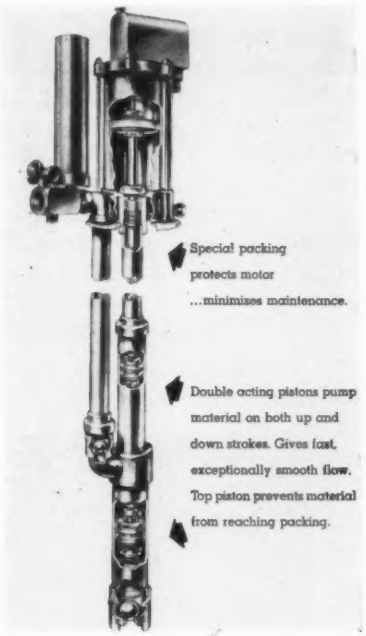
G-11. Tandem-type paint heater for hot spray finishing

A low-cost, tandem-type paint heater, designed exclusively for hot spray technique in applying all types of protective coatings such as lacquers, enamels, varnishes, paints, priming and surface compounds, has been placed on the market.

The manufacturer states that advantages to the user of the paint heater include: improved quality of finish; fewer coats needed; labor savings; savings in thinners; reduced rubbing and polishing; absence of blushing troubles; heavier coating possible; year-round uniformity; savings in floor space, etc.

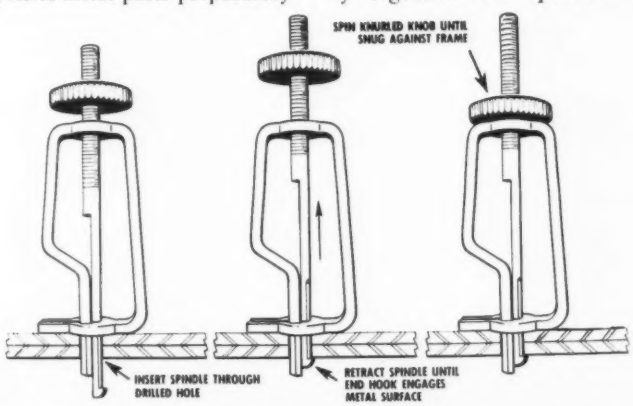
G-12. Air-operated pumps for use with spray or flow guns

A new comprehensive line of air-operated materials handling pumps has been announced by a leading manufacturer of spray finishing equipment. These pumps are especially designed for use with spray or flow guns including those used for fine finishing work. These pumps handle all materials from thinners, enamels, lacquers, and paints to adhesives, sound deadeners, and protective coatings of every kind.


Special packing protects motor ...minimizes maintenance.
Double acting pistons pump material on both up and down strokes. Gives fast, exceptionally smooth flow.
Top piston prevents material from reaching packing.

G-13. Special gripper for holding sheet metal during riveting

Solving the problem of properly holding sheet metal parts preparatory to riveting are these inexpensive sheet grippers. This gripper operates without the use of springs or special tools, and sheet metal parts are drawn closely together. This positive feature eliminates any tendencies of rivet shanks to swell between sheets and assures a properly riveted joint. The


SPIN KNURLED KNOB UNTIL SNUG AGAINST FRAME
INSERT SPINDLE THROUGH DRILLED HOLE
RETRACT SPINDLE UNTIL END HOOK ENGAGES METAL SURFACE

accompanying illustrations and notations show operating principles of the sheet gripper.

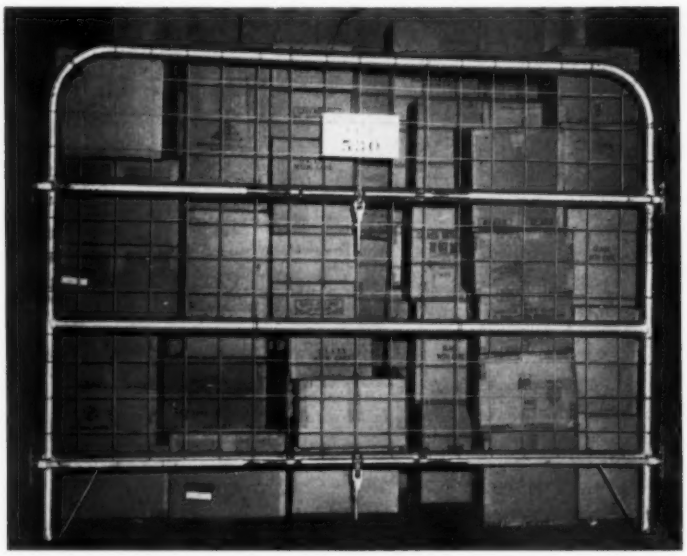
G-14. New rust-proofing process

Recommended as a replacement for cadmium or zinc in many rust-proofing applications, superior corrosion resistance is credited to a new phosphate coating material. When immersed in a solution of the material, iron and steel surfaces are chemically converted into a dark gray, uniform, dense, non-metallic phosphate coating. After rinsing, the highly absorbent coating is impregnated with a rust-proofing oil, giving the products a permanent corrosion-proof layer that is dry to the touch.

Standard salt spray tests indicate a resistance well in excess of the 36 hours required in U.S. Army Specification 57-O-2c, Type II, Class B. Typical applications are for: metal fasteners, appliances, sheet metal parts, rockets, mortar shells, etc.

G-15. All-steel bulkheads for carloading

This sectional bulkhead is manufactured in identical sections to be cold drawn welded wire fabric, the sections weigh only 105 lbs. each.



used in bulkheading tiered shipments in either sectional or full carloads. Sections are 8'4" wide and 4' high. Manufactured of seamless tubing and

Telescoping cleats provide for fit to all car widths. The average installation time for a 2-section unit is listed as four minutes.

FINISH
360 N. Michigan Ave.
Chicago 1, Illinois

Please forward to me at once information on the new supplies and equipment and new industrial literature as enumerated below:

No._____ **No.**_____ **No.**_____ **No.**_____

No._____ **No.**_____ **No.**_____ **No.**_____

Name _____ **Title** _____

Company _____

Company Address _____

City _____ **Zone**____ **State** _____

G-16. One-handed strap cutter designed for safety

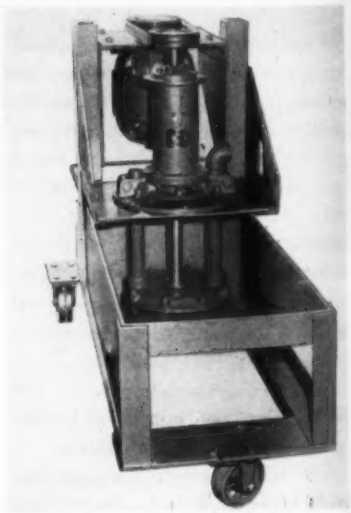
A new type of strap cutter is being offered which enables the workman

to sever package or carloading straps with one hand.

The new tool opens itself when picked up for use by the operators, so that in no part of the cutting operation is there a requirement for using two hands on the tool. This feature is an important safety factor.

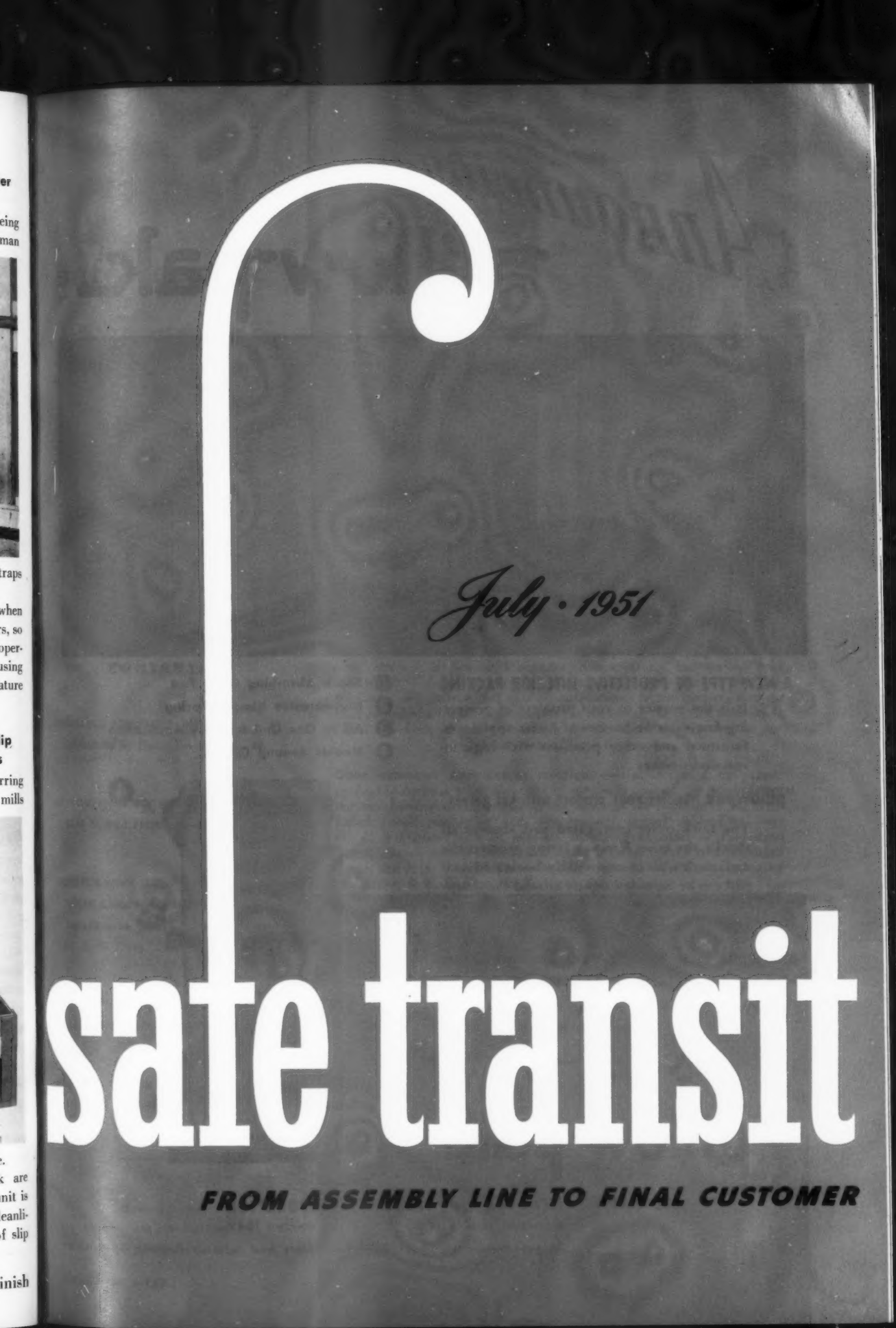
G-17. Pump-cart handles slip from mills to storage tanks

A convenient unit for transferring slips and glazes from grinding mills

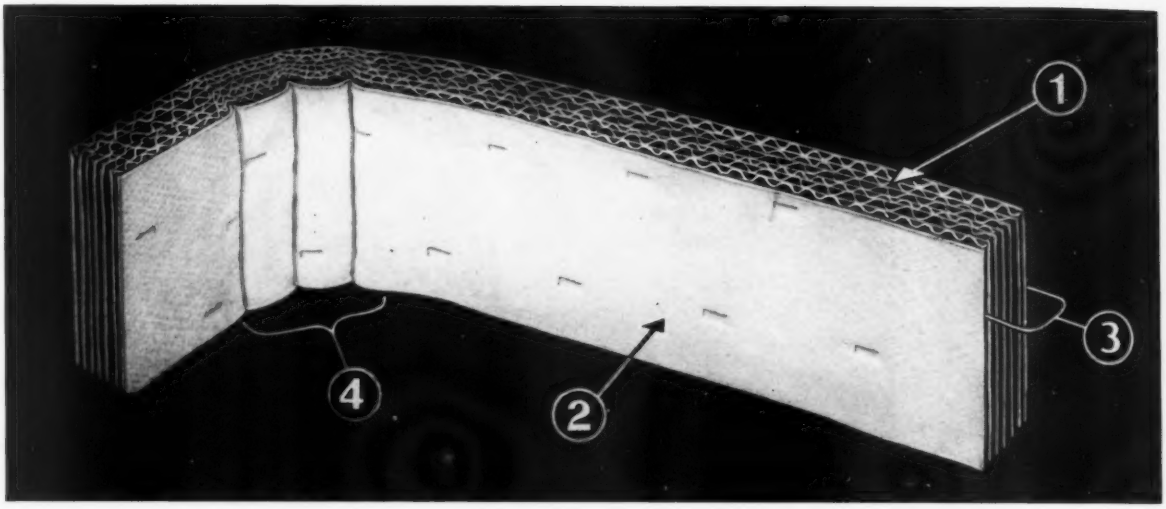


to overhead storage is available.

Both pump and sump tank are easy to flush and clean. The unit is claimed to improve mill room cleanliness and to simplify transfer of slip from mills to storage tanks.


July · 1951
sate transit
FROM ASSEMBLY LINE TO FINAL CUSTOMER

Announcing... pillowpak*



A NEW TYPE OF PROTECTIVE INTERIOR PACKING

It is the answer to your problem of protecting fine exterior finishes of home appliances, furniture, and other products with high inspection finishes . . .

"pillowpak handles your product with kid gloves"

The thick outer corrugated pad absorbs all shocks, the inner Kimpak facing protects the surface. It's all in one solidly laminated unit and can be moulded tightly around the sharpest corners, then locked into position in a single operation.

pillowpak saves the surface and saves man hours

All types of interior packing pads built to your specifications. Give us your problem and our designer will help you solve it.

1. Shock Absorbing Outer Pad
2. Non-abrasive Kimpak Facing
3. All in One Unit for Easy Application
4. Moulds Around Corners

A *Showing application of PILLOWPAK to a domestic refrigerator. Note protection for door handle.*

* pillowpak

*TRADE MARK

MENASHA WOODEN WARE CORPORATION
Menasha, Wisconsin • Founded 1849
Manufacturers of Corrugated Containers and Interior Packing Specialties

safe transit

A monthly trade publication section devoted to improved packaging and shipping and materials handling practices in the home appliance and allied metal products field.

Plant experience information for all executives and plant men interested in the problem of packaging and shipping improvement and loss prevention.

Complete information on the National Safe Transit pre-shipment testing program for packaged finished products, and detailed progress reports of divisions and sub-committees of the National Safe Transit Committee.

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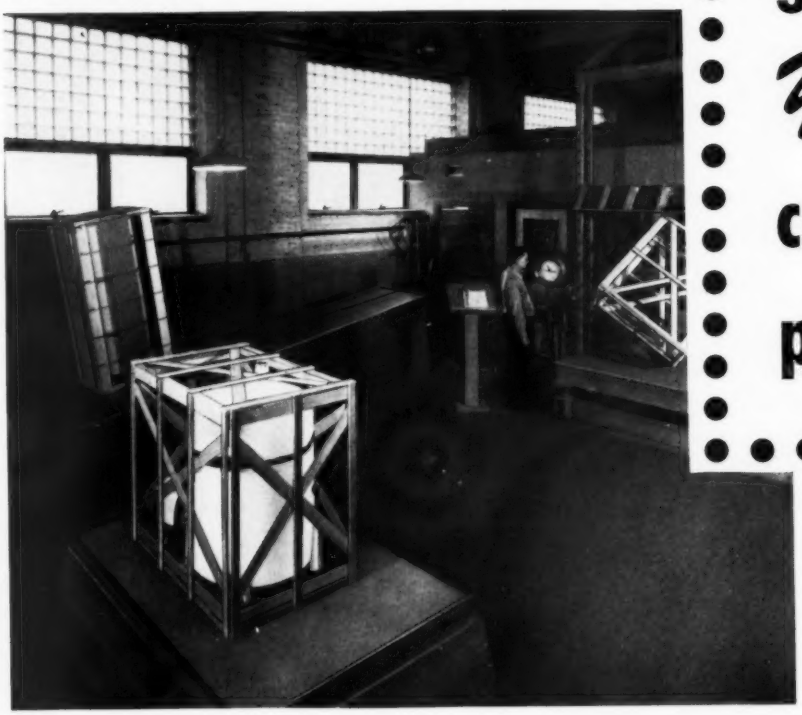
DANA CHASE PUBLICATIONS
PRINTED IN U.S.A.

***Crated refrigerators, freezer chests and milk coolers**—at International Harvester's Evansville Works—are "selected at random from the warehouse conveyor and tested for uniformity of product protection," states J. M. Greene, Works traffic supervisor. "Evansville Works uses the NST Label on each crated unit and on the door of the railroad car. We believe that this visual evidence to the carriers that we have complied with all requirements for the use of the NST Committee's Label has been largely responsible for the marked reduction in our damage claims," says Greene.*

***Good customer and dealer relations**—are promoted by proper packaging because when the crate or carton is opened, the condition of the merchandise inside attests to the fact that the promise of the NST Label (good packaging and safe transit) is not misleading, says D. A. Williams (right in photo), packaging engineer at Perfection Stove. Shown with Williams, examining a Label affixed to a packaged range, are J. A. Podojil, formerly chairman of Perfection's packaging committee, & F. R. Stein, traffic mgr. (see production story, page 21).*

A proving ground for *Your* crated product!

● Section of the Chicago Mill and Lumber Company Testing Laboratory. This Laboratory is certified by the National Safe Transit Committee.



SENDING your crated product through the Chicago Mill and Lumber Company Laboratory is like taking out an insurance policy for safe delivery.

Experienced engineers and crate designers use the latest in testing equipment to search for weaknesses that may result in transit damage to your valuable finished products. Assurance of safe arrival will result from pre-shipment testing in our certified laboratory. Avail yourself of this service.

Chicago Mill has the most diversified line of boxes and crates in the country. The most adaptable and economical will always be recommended.

CHICAGO MILL AND LUMBER COMPANY

33 South Clark Street — **Chicago 3, Illinois**

Plants at: Helena, Arkansas • Greenville, Mississippi • Rockmart, Georgia
Tallulah, Louisiana • South Fork, Colorado • Chicago, Illinois

Insurance for "long distance" shipments

manufacturer of wall, floor and utility room furnaces reduces shipping container tare weight up to 40%; slashes overall packing time by 35%

by Harry Beetham • NORTHWEST METAL PRODUCTS INC., KENT, WASHINGTON

REALIZING the importance of conserving both manpower and materials during the present national emergency, we recently conferred with scientific packaging engineers, and with their assistance developed ten designs of specially engineered shipping crates for our entire line of "Even-Temp" oil-burning wall, floor, and utility room furnaces which are shipped all over the country.

Author's Note:

High-speed methods of packing that results in complete protection of the packaged product in transit, and low container tare weights that save freight charges, are of special importance to manufacturers whose plants are located remotely from many of their customers.

Such a manufacturer is Northwest Metal Products, located in the Puget Sound area, which ships its line of heating equipment to points all over this country.

Immediate benefits included the elimination of shipping damage due to container failure and from ordinary shipping shocks and jars, plus a slashing of overall packing time up to 35 per cent; reduction of shipping container tare weight up to 40 per cent; and considerable savings in overall packing costs.

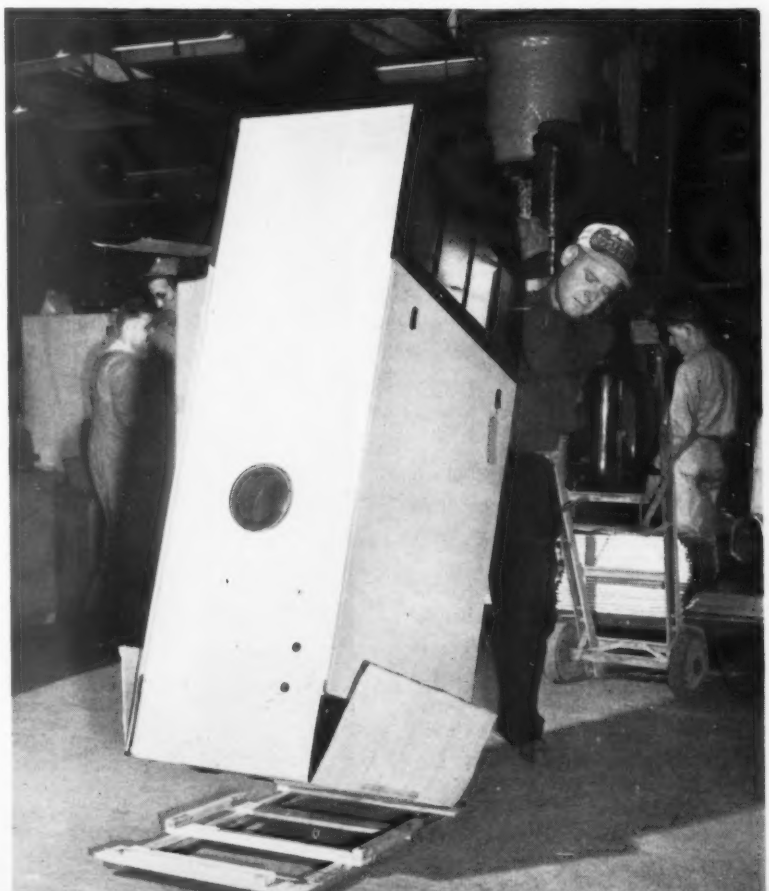
"Nuisance damage" eliminated

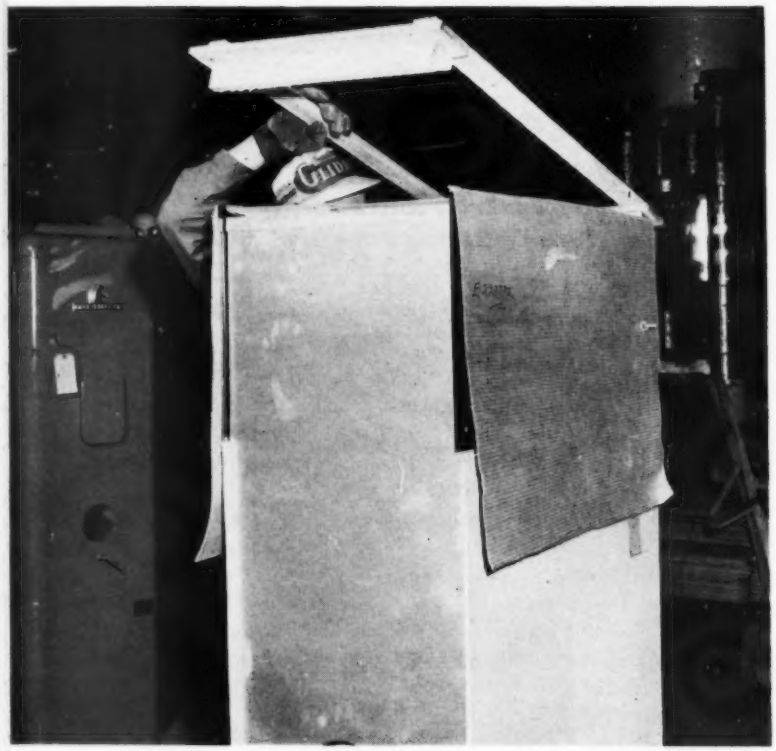
One especially bothersome nuisance was eliminated. We used to experience a bending damage on an important metal flange that protrudes above the top of one model floor furnace. The container formerly used did not properly protect the flange.

The crate we now use for this particular model, and several other models, is engineered with a top that fits snugly over the flange and fully protects the flange against being bent or dented. This alone saved us considerable expense and time, and is an example of what can be accomplished through scientific shipping container engineering to make the crate fit the product with maximum protection.

One of our utility room furnace models has control units on the front that formerly presented trouble in packing. A new crate, however, was engineered so that the model is fully enclosed by nailing a hood to the crate over the protruding controls. The same crate proved to be exactly suitable for packing another model furnace that does not have such a protuberance, thus eliminating the need to carry two different crates in inventory. Two floor furnace models are similarly packed in identical crates with only a different base required for one model. In this instance, the burner assembly protrudes

A wall furnace is placed upon the base of its shipping crate in the Kent factory of Northwest Metal Products as the first step in packing. Note how the crate base is constructed with wooden members that will hold the base of the unit steady during shipment and handling.





Above: A floor furnace that "floats" upon a built-up base of a wirebound shipping crate is secured against shifting by brackets nailed to the base. Assembly of the furnace will be completed after this step.

Above: The corner flange on two sides of this wall furnace formerly was frequently bent or dented during shipment. Now the top of the crate is designed to provide full protection to the flange during shipment and handling.

Right: Here, the wall furnace has been "wrapped up" in a wirebound crate, which is about to be closed quickly and easily by engaging and bending the wire loop fasteners.

---

below the bottom of the unit, which necessitates resting the furnace upon a crate base built up so that it literally "floats" during shipment.

We "pressure pack" all models of our wall and floor furnaces in wrap-around crates so that no nailing is needed in most cases to make a highly shock-absorbent, structurally strong package that can be either high-stacked safely, or shipped long distances safely.

Kimpak Float Packaging*

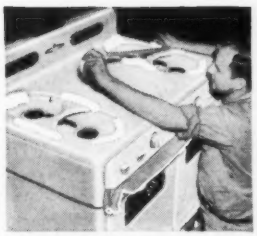
GAS RANGE
Perfection Stove Company

Cuts shipping costs — reduces damage in transit!

Today's highly competitive market requires maximum economy and efficiency in every phase of manufacture and distribution. This applies in particular to the shipment of products from your factory. They must arrive in perfect condition, yet the cost of your protective measures must not be excessive.

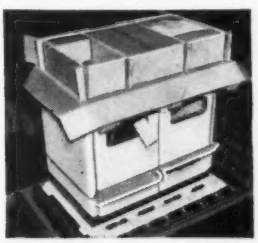
KIMPAK* Float Packaging is the answer to this problem. It is the most efficient packaging method in the world. Yet KIMPAK is so easy to apply, so light in weight, it actually *cuts shipping costs*. In addition to preventing damage in transit, KIMPAK creped wadding makes a fine impression wherever your product is received. The haphazardly-packed appearance, the litter and muss so common with other packaging materials, are eliminated.

There is a specification of KIMPAK for every product – and for all Four Basic Methods of Interior Packaging: Bracing and Blocking, Flotation Packaging, Surface Protection, Absorbent Packaging. For information, refer to your classified telephone directory under "Packing Materials" or "Packing Materials – Shipping"; or write directly to Kimberly-Clark Corp.



1. Twelve thick KIMPAK pads are used to protect all enameled surfaces from rubbing and chipping.

2. Top of range is completely protected with KIMPAK cushioning. KIMPAK protects all door and drawer edges.



3. "Egg crate" is now added. KIMPAK separates and cushions accessories in compartments.

4. Shipping container now completes the package, and range is protected against transportation hazards.

All photographs courtesy of Perfection Stove Co., Cleveland, Ohio

Kimpak

REG. U.S. PAT. OFF. & FOREIGN COUNTRIES

CREPED WADDING

A PRODUCT OF Kimberly Clark RESEARCH

*T. M. REG. U. S. PAT. OFF.

FREE BOOKLET

KIMBERLY-CLARK CORPORATION FIN-751
Neenah, Wisconsin

Please send me free, the illustrated KIMPAK Booklet, "Float Packaging".

Name _____

Firm _____

Address _____

City _____ *Zone* _____ *State* _____

81 companies cooperating in Safe Transit program

THE following companies are certified under the National Safe Transit Program. They are privileged to use the N.S.T. Label.

Admiral Corporation
Chicago, Illinois

AllianceWare, Inc.
Alliance, Ohio

American Central Division
Avco Mfg. Corp.
Connersville, Indiana

American Stove Company
Cleveland, Ohio

American Stove Company
St. Louis, Missouri

Andes Range & Furnace Corporation
Geneva, New York

Apex Electrical Manufacturing Co.
Cleveland, Ohio

Appliance Manufacturing Company
Alliance, Ohio

Automatic Washer Company
Newton, Iowa

The Bellaire Enamel Company
Bellaire, Ohio

Belmont Stamping & Enameling Co.
New Philadelphia, Ohio

Bendix Home Appliances
Division—Avco Mfg. Corp.
South Bend, Indiana

Boston Stove Foundry Company
Reading, Massachusetts

Caloric Stove Corporation
Topton, Pennsylvania

Canton Stamping & Enameling Co.
Canton, Ohio

Central Rubber & Steel Corporation
Findlay, Ohio

Chambers Corporation
Shelbyville, Indiana

Chicago Vitreous Enamel Prod. Co.
Cicero, Illinois

Conlon Bros. Mfg. Co.
Chicago, Illinois

Conlon-Moore Corporation
Chicago, Illinois

Cribben and Sexton Company
Chicago, Illinois

Crosley Division, Avco Mfg. Corp.
Richmond, Indiana

Crosley Division, Avco Mfg. Corp.
Nashville, Tennessee

Crunden Martin Manufacturing Co.
St. Louis, Missouri

Dearborn Stove Company
Chicago, Illinois

The Dexter Company
Fairfield, Iowa

Dixie Foundry Company, Inc.
Cleveland, Tennessee

Duo-Therm Division
Motor Wheel Corporation
Lansing, Michigan

The Enamel Products Company
Cleveland, Ohio

Federal Enameling & Stamping Co.
Pittsburgh, Pennsylvania

The Fletcher Enamel Company
Dunbar, West Virginia

Florence Stove Company
Kankakee, Illinois

The Floyd-Wells Company
Royersford, Pennsylvania

General Electric Company
Erie, Pennsylvania

Globe American Corporation
Kokomo, Indiana

Hardwick Stove Company
Cleveland, Tennessee

Holland-Rieger Division
Apex Electrical Mfg. Co.
Sandusky, Ohio

Hotpoint, Inc.
Chicago, Illinois

International Harvester Company
Evansville, Indiana

Kaiser Metal Products, Inc.
Bristol, Pennsylvania

Kresky Manufacturing Co., Inc.
Petaluma, California

Kuehne Manufacturing Co.
Mattoon, Illinois

Landers, Frary & Clark
New Britain, Connecticut

A. J. Lindemann & Hoverson Co.
Milwaukee, Wisconsin

Lisk-Savory Corporation
Buffalo, New York

Majestic Manufacturing Co.
St. Louis, Missouri

Malleable Iron Range Company
Beaver Dam, Wisconsin

The Maytag Company
Newton, Iowa

Meadows Division, Thor Corporation
Bloomington, Illinois

Midwest Manufacturing Company
Division of Admiral Corp.
Galesburg, Illinois

Moffats, Limited
Weston, Ontario, Canada

The Moore Enameling & Mfg. Co.
West Lafayette, Ohio

Mt. Vernon Furnace & Mfg. Co.
Mt. Vernon, Illinois

Murray Corporation of America
Scranton, Pennsylvania

Murray Manufacturing Company
Murray, Kentucky

Nash-Kelvinator Corporation
Grand Rapids, Mich.

Nesco, Inc.
Milwaukee, Wisconsin

Newark Stove Company
Newark, Ohio

Norge Division, Borg-Warner Corp.
Effingham, Illinois

Norge Division, Borg-Warner Corp.
Herrin, Illinois

Norge Division, Borg-Warner Corp.
Muskegon Heights, Michigan

Odin Stove Manufacturing Co.
Erie, Pennsylvania

Perfection Stove Company
Cleveland, Ohio

Philco Corp., Refrigerator Division
Philadelphia, Pennsylvania

Prentiss-Wabers Products Co.
Wisconsin Rapids, Wisconsin

Ranney Refrigerator Company
Greenville, Michigan

Republic Stamping & Enameling Co.
Canton, Ohio

Geo. D. Roper Corporation
Rockford, Illinois

Milton Roy Company
Philadelphia, Pennsylvania

Seeger Refrigerator Co.
Evansville, Indiana

Seeger Refrigerator Co.
St. Paul, Minnesota

Servel, Inc.
Evansville, Indiana

A. O. Smith Corporation
Kankakee, Illinois

Speed Queen Corp., Ironer Division
Algonquin, Illinois

The Tappan Stove Company
Mansfield, Ohio

Temco, Inc.
Nashville, Tennessee

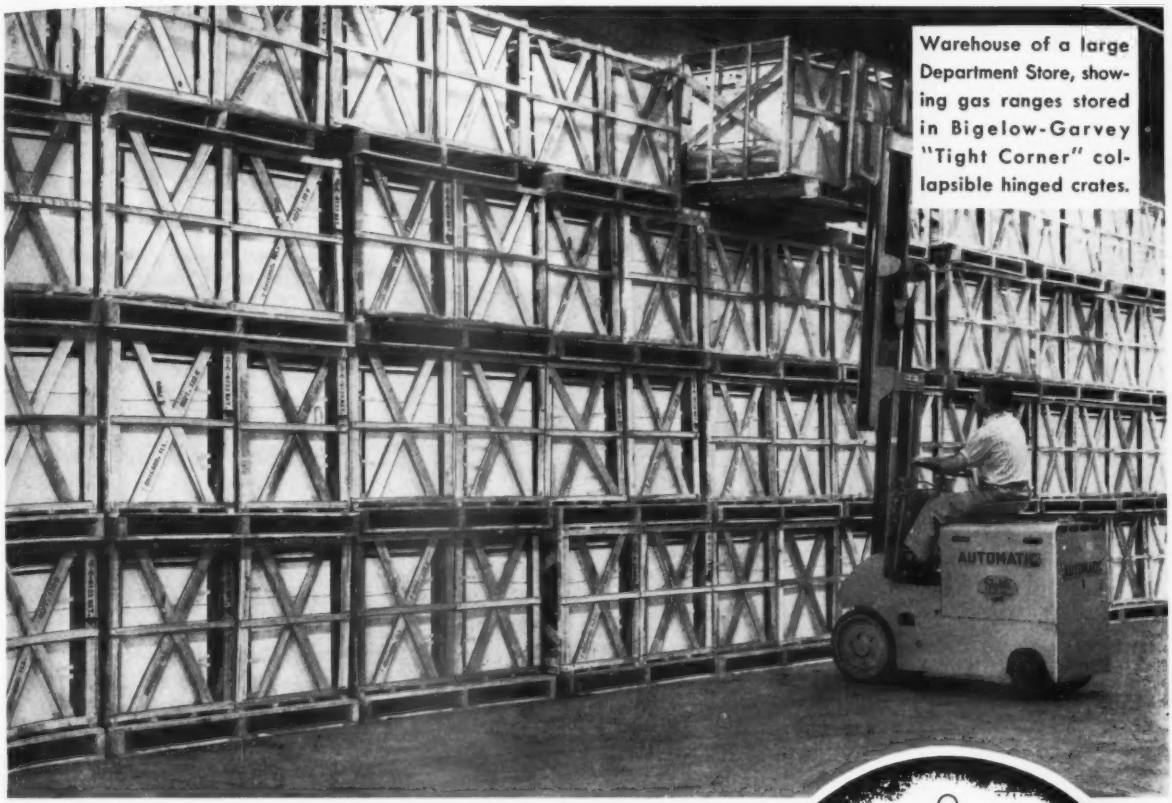
Thor Corporation
Chicago, Illinois

United States Stamping Company
Moundsville, West Virginia

Westinghouse Electric Corporation
East Springfield, Mass.

Westinghouse Electric Corporation
Mansfield, Ohio

S. S. White Dental Mfg. Co.
Staten Island, New York

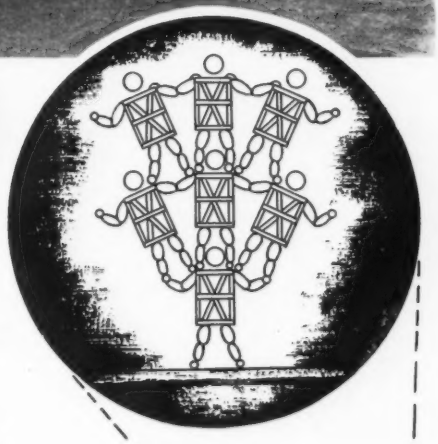


Warehouse of a large Department Store, showing gas ranges stored in Bigelow-Garvey "Tight Corner" collapsible hinged crates.

STRENGTH

for STACKING . . . for HANDLING

There is STRENGTH in the Bigelow-Garvey "Tight Corner" collapsible crate—strength to handle all normal transportation and handling hazards—strength for stacking to all normal heights for storage.



Bigelow-Garvey crates are engineered for your particular product, built of the finest crating materials and accurately manufactured in all details.

The "Tight Corner" hinged crates offer rigidity, strength, lightness and ease of assembly not found in ordinary crates. This is due to the fact that they are 65% assembled. (Only 3 parts—top, bottom, and collapsible tube.) Labor for assembly in your plant consists of nailing top and bottom in position. (Nail holes are pre-drilled as a time saver.)

We will welcome the opportunity to help you find the right answer to your shipping problems, whether they pertain to civilian goods or to equipment and supplies for defense. Write us *now* and you can soon begin to save money and reduce shipping losses.

Manufacturers of ranges and *all* types of home appliances are turning to the "Tight Corner" collapsible crate for assurance of safe delivery of their finished products.

Write us regarding your shipping problems

BIGELOW-GARVEY LUMBER CO.

General Office and Laboratory

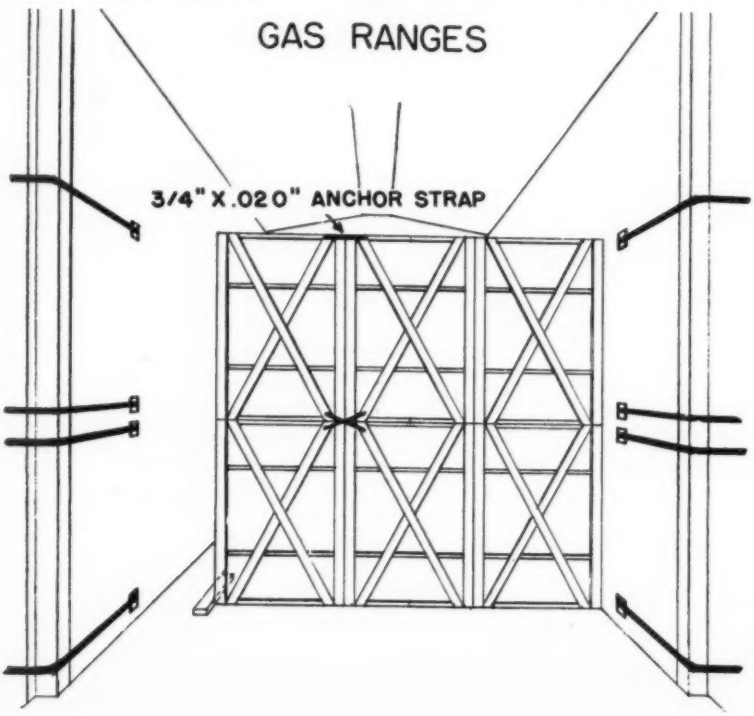
320 West Huron Street, Chicago 10, ILL.

MILLS: ARKANSAS GEORGIA WISCONSIN MINNESOTA ILLINOIS

CASE HISTORY NO. III

Globe American Corp., Kokomo, Ind.

This photograph of arrival at destination shows the excellent condition of the car's lading. Note the truss-tensioned strapping method, plus the reinforcing straps on the sides over the strapping.



when load does not fill full width of boxcar, bracing must be provided to prevent side shift—if a second tier is loaded, care must be taken to prevent side shift of both tiers

to prevent side shift, cross strapping of individual crated units, one to the other, has proved most effective—top tier and bottom tier are tied together in criss-cross pattern —in this loading method, too, truss-tensioned strapping minimizes the thrust of center section of load

GLOBE AMERICAN first studied former methods of loading and bracing, type of crate used, methods of internal packing and other factors. Then the type of load to be used was determined.

In this instance, the anchored load method was decided upon, using a truss-type gate and four horizontal straps, tensioned and sealed on the side. Other methods were rejected for various reasons — tendency to shift on impact (as much as 49 inches), danger of blocking doorway, inability to start unloading easily, etc.

More than 100 cars were loaded and braced under the supervision of a field engineer. Where possible, inspections were made at destinations, and the results photographed. The test shipments arrived in good condition, and bracing costs were reduced. The men who loaded and braced the cars, and the consignee, all agreed that the new method offered easier and faster handling.

Consignees expressed their approval of the change in loading and bracing methods by letters such as the following: "Advise you continue this method." Another said "An excellent car—saves us a half-hour in unloading." A third said "Excellent load. No deformed gates, no crate failures."

This drawing shows method of draping the car, number and size of strapping used, plus method of tying crates together to prevent side shifting of top and bottom tiers. Note guide blocking on left side of car floor. The anchor plates are placed no less than 36" from the face of the load.

take special care in loading at doorways—avoid loading crates, skids, pallets, etc. crosswise in doorways —make sure containers are correctly designed for this type of loading

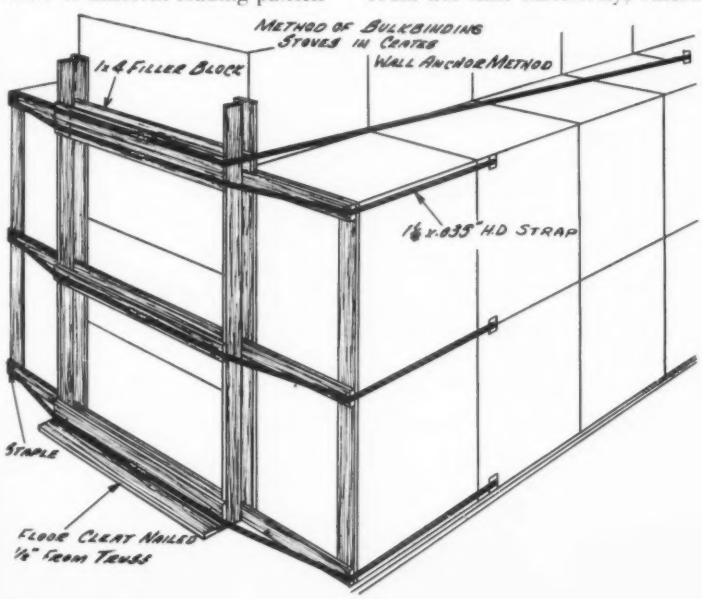
CASE HISTORY NO. IV

Florence Stove Co., Kankakee, Ill.

Photo shows effective use of a vertical truss for added strength to the gate, particularly at the top of load where the thrust is extra heavy.

FLORENCE STOVE was beset with a troublesome basic problem. It was to find a loading method which would permit a full load to make minimum carload weight, and thus avoid paying for shipping "air". In the largest boxcars, the shipper could load 80 stoves. In another type of car, only 79 ranges got aboard, just enough to make the weight requirements. However, this result was not accomplished until the range was redesigned with extra back reinforcing so that it could be laid on its back in loading. The basic loading pattern consisted of two double-decked rows upright on each side of the car and the center row (four high) lying on their backs. These would just go into the center portion of the car under the roof section. Part of this loading pattern consisted of a doorway section of ranges, upright but loaded crosswise to the main unit. Finally, a load was sent to the test track for more extensive tests.

It was established early that the method of loading crosswise in the doorway was a major cause of failure. This permitted the strong portion of the lengthwise loaded ranges to bear against the weak portion of the crate. A different loading pattern was worked out which made it possible to load all the ranges "in line". It was apparent that it would be necessary to keep the crated products braced in such a manner that they could not shift excessively, otherwise it would be impossible to unload them at destination. Another problem to overcome was to resist the excessive thrust of the center unit where four-high loading was used. Sub-standard containers were found to fail under severe impact. No change in container was necessary, except where faulty materials were used, a problem which disappeared upon establishing close inspection of containers.


METHOD OF BULKBINDING STOVES IN CRATES
WALL ANCHOR METHOD
1x4 FILLER BLOCK
1¼ x .035" HD STRAP
STAPLE
FLOOR CLEAT NAILED ½" FROM TRUSS

Lading is stowed tightly from end wall of car into the doorway. Wall-anchored method of strapping is used. At the car sidewalls and over a studding, 1¼" x .035" strapping is fixed by means of anchor plates. At face of each unit or load is placed a gate or bulkhead engineered and designed for load straps. This strapping then passes around and over front or face of gate which, when tensioned and sealed, acts to hold the load anchored in fixed position in car, with minimum of shift possible. Center truss is added to gate to resist excessive thrust of center shift.

Jervis B. Webb

finishfotos

Wirebound Box Mfrs. Assoc.

Signode Steel Strapping

finishfotos

Union Steel Products

SNAPSHOTS FROM MATERIALS HANDLING EXPOSITION

(see news coverage in June finish, page 77)

Mechanical Handling Systems

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National Wooden Box Assoc.

A. J. Gerrard

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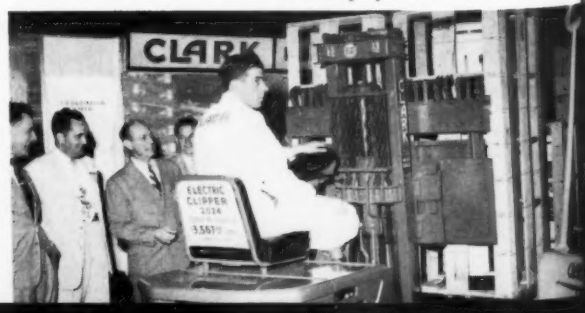
International Staple & Machine

Triangle Equipment

Clark Equipment



The WATKINS CONTAINER

Stronger . .
Lighter . .
Labor Saving . .

1. Stronger — The Watkins Container is more rigid. It has greater resistance to "weaving." Corner cleats resist corner blows. Vertical cleats give greater column strength. It supports greater loads in the warehouse.

2. Lighter — Weight saving up to several pounds can be made in practically every case. Lighter to handle. Lighter to ship.

3. Labor Saving — Watkins Containers are 75% assembled. Only three pieces to handle. Ideal for conveyor packing and high production.

There is advertising value in every container—a traveling billboard. Can be printed in two colors on four sides. And, there is product protection—no dust or dirt can mar fine product finishes.

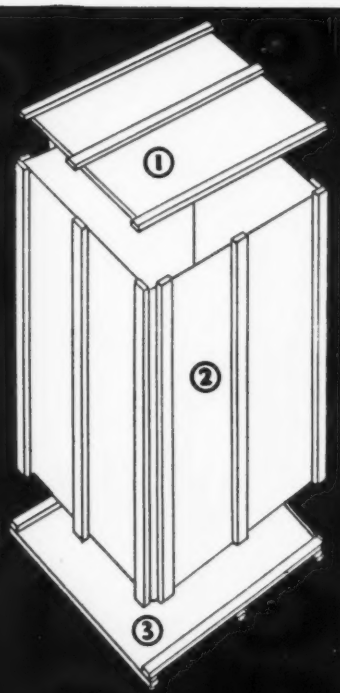
Watkins containers save time in the shipping department; give better protection in transit. Major appliances and any other similar products that can be shipped in a wooden crate can be shipped better in this container. Weights up to 800 pounds are being shipped.

These companies build WATKINS containers

Cornell Wood Products Co., Hummel & Downing Division	1514 E. Thomas Ave., Milwaukee, Wisconsin
Cozier Container Corp.	446 E. 131st St., Cleveland, Ohio
Crate-Rite Mfg. Corp., Div. of Pacific Ports Ind. Inc.	10901 Russet St., Oakland, California
Dura-Crates, Inc.	940 E. Michigan St., Indianapolis, Indiana
General Box Co.	500 N. Dearborn St., Chicago, Illinois, and 16th and Maple Sts., Louisville, Kentucky
Hemb & Martin Mfg. Co.	Watseka, Illinois
Illinois Box & Crate Co.	811 Center St., Plainfield, Illinois
Kieckhefer Box & Lumber Co.	1715 W. Canal St., Milwaukee, Wisconsin
Lone Container Corp.	10212 Denton Rd., Dallas, Texas
Lewisburg Container Co.	243 Singer St., Lewisburg, Ohio
Love Mfg. Inc.	608 S. Commerce St., Wichita, Kansas

—an inquiry to any of these companies will get prompt attention —

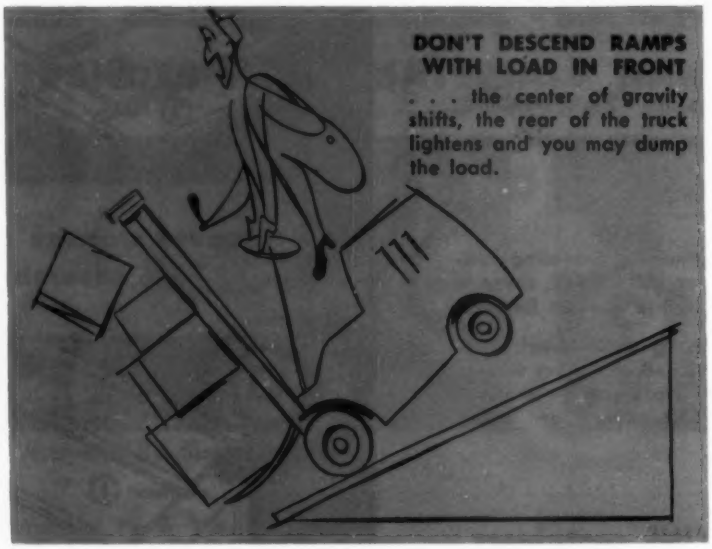
saves storage space 75% assembled



The · WATKINS CONTAINER · Manufacturers

KEEP CLEAR OF EDGE OF LOADING DOCK

. . . "sky hooks" are not standard equipment on fork trucks.

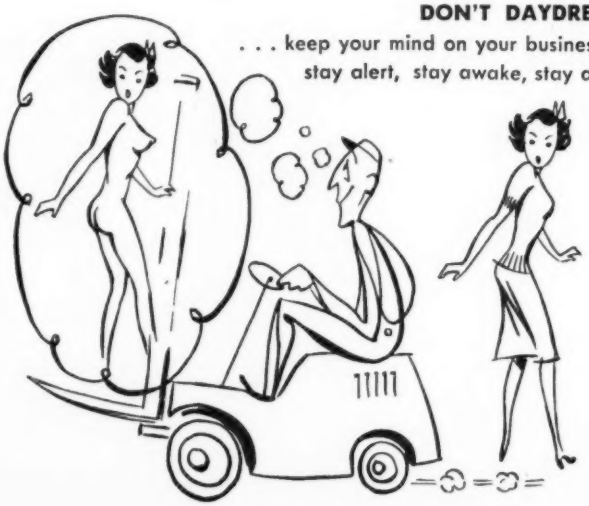


DON'T DESCEND RAMPS WITH LOAD IN FRONT

. . . the center of gravity shifts, the rear of the truck lightens and you may dump the load.

DON'T DAYDREAM

. . . keep your mind on your business — stay alert, stay awake, stay alive.



NAMED NPA STRAPPING CHIEF

Arvid W. Hamrick, senior field engineer for Signode Steel Strapping

Co., has been named chief of the Steel Strapping Unit, Container and Packaging Division, Chemicals, Rubber and Forest Products Bureau, of the National Production Authority, according to announcement by J. M. Moon, Signode vice-president.

Hamrick's duties will pertain to the distribution of steel to the manufacturers of steel strapping and accessories. During World War II, Hamrick was with the packaging division of the Navy, and for the past five years has been a field engineer with Signode.

Safety Saves!

That sound caution and strict observance of sensible safety rules pay off for the fork truck driver as well as for his employer, is the pleasant theme of a new booklet, "Safety Saves," issued by Clark Equipment Company's Industrial Truck Division.

Shown at the left are three of a series of 28 cartoons shown in the handy five-by-seven pocket size book printed in two colors.

Requests for information about distribution of the book may be directed to *finish*.

HOTPOINT LEASES LARGE WAREHOUSING, SHIPPING SPACE

Approximately 50,000 square feet of warehouse space near its Chicago Heights plant has been leased by Hotpoint, Inc. so that production of commercial electric cooking equipment can be expanded to meet orders related to the nation's defense activity.

All warehousing, shipping and crating activities are to be moved from the 200,000-square-foot Chicago Heights plant to the new location, said Orrin E. Wolf, vice president.

AMERICAN BOX MARKS FIFTIETH ANNIVERSARY

The American Box Co., Cleveland, Ohio, and its subsidiary, American Wood Products Corp., Marion, S. C., mark the firm's fiftieth anniversary this year, according to announcement by George H. Kubes, president.

A pioneer in lightweight, wooden and wirebound box and crate development, the firm began with the old, hand-nailed box during the days of low cost labor and materials and developed lighter weights and faster, mechanized production using thin wood veneers, wirebound to wooden cleats. Today, Kubes said, American wirebound boxes and crates weigh 50 per cent less than former wood boxes of the same capacity, at 20 to 50% lower cost.

GENERAL BOX EXEC. DIES; IRWIN NOW HEADS DETROIT DIVISION

Ralph Cunningham, vice president and director of General Box Company and manager of the Detroit division, died May 17 at the age of 61.

N. W. Embry, president of General Box, has announced that Alan Irwin has been promoted to manager of the firm's Detroit Division.

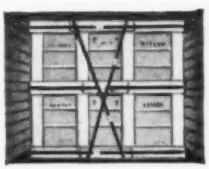
Irwin joined the company in 1940. After a brief period of training and service on the sales force, he was made manager of one of the company's mills. Later, he was placed in charge of one of their designing and experimental laboratories. During the war, he was an officer in the Container Division of the Navy. When he rejoined General Box in 1946, he was assigned to the Detroit plant.

it's a fact

Improved Shipment Protection Can Be Achieved at Lower Cost

For years, manufacturers of home appliances have paid a heavy toll in shipping damage claims. Early attempts to correct this took the form of heavy car bracing—with costs for materials alone running as high as $17 and more.

Signode field engineers, working with shippers and carriers, developed this modern method of carload bracing — a scientific combination of steel strapping and lightweight wood bulkheads.



The results are typified by this on-arrival picture of a carload of kitchen ranges. Damage—none; cash savings on materials used—$7.16; reduction in dunnage weight—115 lbs.!

it's a fact to remember!

Regardless of what, where or how you ship, the improved packaging and shipping techniques constantly being developed by Signode steel strapping specialists are worth investigating . . . today if you're engaged in **DEFENSE** or **ESSENTIAL** civilian production . . . or **TOMORROW** when the need to cut costs and increase sales may become more urgent than ever before.

SIGNODE

STEEL STRAPPING COMPANY

2639 N. Western Ave., Chicago 47, Ill.

Offices coast to coast. *In Canada:* Canadian Steel Strapping Co., Ltd. Foreign subsidiaries and distributors world wide.

this seal SIGNODE *means security in shipping*

NPA ANNOUNCES STRAPPING INDUSTRY ADVISORY COMMITTEE

The National Production Authority, U. S. Department of Commerce, announced the membership list of the Steel Strapping Manufacturers Industry Advisory Committee is:

D. F. Downing, executive vice president, A. J. Gerrard & Co., Melrose Park, Ill.; John E. Ott, vice president, Acme Steel Co., Chicago; Jay Bowman, president, Allegheny Steel Band Co., Pittsburgh; T. J. Moore Jr., vice president, Brainard Steel Co., Warren, Ohio.

J. M. Moon, vice president, Signode Steel Strapping Co., Chicago; Adolph Larsen, assistant to president, Gerrard Steel Strapping Co., Chicago; Charles Osgood, president, C. Tennant, Sons & Co., New York City; and H. C. Bristoll, vice president, Stanley Works, New Britain, Conn.

AAR CONDUCTS DEFENSE CARLOADING SEMINARS

The Association of American Railroads has just completed a series of six carloading seminars, which were arranged at the request of the Loading Rules Committee of the Military Traffic Service of the Office of the Secretary of Defense. V. R. Hawthorne, executive vice chairman, Mechanical Division; Edw. J. Dahill, chief engineer, Freight Loading and Container Section; and H. A. Campbell, chief inspector, Bureau of Explosives, worked with the Loading Rules Committee to prepare and conduct the seminars on car-loading and bracing methods for various military installations.

The seminars were held at Tinker Field, Oklahoma City, Okla.; Oakland Naval Supply Center, Oakland, Calif.; Great Lakes Naval Station, Great Lakes, Ill.; Ft. McPherson, Atlanta, Ga.; New York Port of Embarkation, Brooklyn, N.Y.; and Bolling Field, Washington, D.C. Each seminar covered three days and there was a total of 668 officers and civilians of the Army, Navy and Air Force registered.

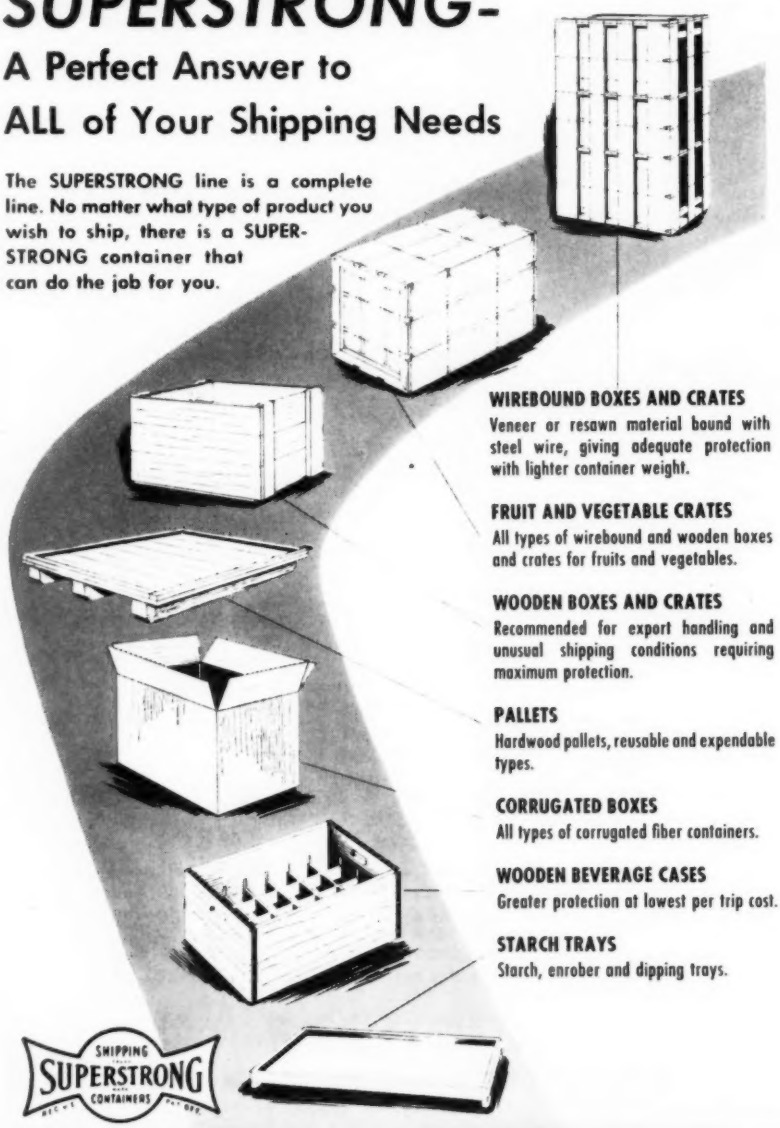
The entire time of the seminars was devoted to the loading and bracing in freight cars of all descriptions of materials, supplies, ordnance vehicles and articles used by the Armed Services. The lectures given by the AAR staffs were supplemented by use of slide films, transparencies and motion pictures. The last covered impact tests, the actual loading of miscellaneous freight, the loading and blocking of wheeled vehicles in train loads and the operation of electric pneumatic classifications yards.

Those who attended these seminars will now set up similar groups at their local levels with the object of instructing the working personnel in safe and secure loading and bracing methods, to bring about uniformity in these methods, and to impress upon all concerned with loading, the importance of good practices which tests and experience have shown to be practicable and effective in preventing loss and damage.

SUPERSTRONG-

A Perfect Answer to ALL of Your Shipping Needs

The SUPERSTRONG line is a complete line. No matter what type of product you wish to ship, there is a SUPERSTRONG container that can do the job for you.



WIREBOUND BOXES AND CRATES
Veneer or resawn material bound with steel wire, giving adequate protection with lighter container weight.

FRUIT AND VEGETABLE CRATES
All types of wirebound and wooden boxes and crates for fruits and vegetables.

WOODEN BOXES AND CRATES
Recommended for export handling and unusual shipping conditions requiring maximum protection.

PALLETS
Hardwood pallets, reusable and expendable types.

CORRUGATED BOXES
All types of corrugated fiber containers.

WOODEN BEVERAGE CASES
Greater protection at lowest per trip cost.

STARCH TRAYS
Starch, enrober and dipping trays.

SHIPPING SUPERSTRONG CONTAINERS

RATHBORNE, HAIR and RIDGWAY BOX CO.
1440 WEST 21st PLACE • CHICAGO 8, ILLINOIS

Medal of Honor

Master Sergeant Travis Watkins, of Gladewater, Texas—Medal of Honor. On September 3, 1950, near Yongsan, Korea, Sergeant Watkins was wounded and paralyzed from the waist down. Ordering his squad to pull out and leave him, he stayed behind and died covering their withdrawal.

Sergeant Watkins gave his life for freedom. What can you do?

This. You can begin today to do your share in defense of the country he defended far "above and beyond the call of duty" by buying more . . . and more . . . and more United States Defense* Bonds.

For your Defense Bonds strengthen America. And if you will make our country strong enough now, American boys may never have to give their lives again. Defense is *your* job, too.

Remember that when you're buying bonds for national defense, you're also building a personal reserve of cash savings. Remember, too, that if you don't save *regularly*, you generally don't save at all. So go to your company's pay office—now—and sign up to buy Defense Bonds through the Payroll Savings Plan. Don't forget that now *every United States Series E Bond you own* automatically goes on earning interest for 20 years from date of purchase instead of 10 years as before. This means, for example, that a Bond you bought for $18.75 can return you not just $25 but as much as $33.33! For your country's security, and your own, buy U. S. Defense Bonds now!

*U.S. Savings Bonds are Defense Bonds - Buy them regularly!

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"I saw your ad in finish"

Condensations . . .

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specimens that were ceramic coated no significant attack took place.

The results may be summarized as follows:

1. Large differences in the resistances of the several alloys to attack by lead bromide were noted, alloys S-816, Vitallium and Inconel being more resistant than the two high-iron, austenitic-type alloys, 19-9DL and type 347 stainless steel.

2. Preoxidation of the alloys prior to test tended to retard the $PbBr_2$ corrosion for a short time after which the attack proceeded at an undiminished rate.

3. Ceramic coatings appeared to be inert to the $PbBr_2$ fumes, and thus successfully inhibited corrosion of the alloys for the full six-hour test period.

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Executive and Sales Office: 111 BROADWAY, NEW YORK CITY · General Offices, Works, and Research Laboratories: NIAGARA FALLS, N. Y.

MALLEABLE RANGE SAFETY AWARD

Malleable Iron Range Co., Beaver Dam, Wis., has been awarded a plaque for the best safety record in the Class A industrial plants of Wisconsin during the past three years.

TUTTLE & KIFT NAMES KAUFFMAN SALES MANAGER

John R. Kauffman has been appointed sales manager of Tuttle & Kift, Inc., Chicago, it was announced by H. F. Bond, vice president-sales, who also announced that Jack D. Mackenzie has been named to the replacement sales division, and

JOHN KAUFFMAN

Charles F. Moreland to head the customer service department.

All three men have been associated for several years with either T & K, manufacturers of electrical heating elements and controls, or its parent company, Ferro Enamel Corp.

Kauffman joined Ferro in 1940 and at one time was eastern sales manager of the Allied Engineering Division. He has been coordinating sales activities and national defense work since moving to Tuttle & Kift last September as special assistant to Mr. Bond.

Mackenzie, formerly with Ferro Enamel Supply Co., Kirkland, Ill., was at one time automotive sales manager of Ideal Industries and prior to that was with Electric Auto-Lite in sales capacities. A veteran of 35 years in the electric heating and plumbing industries, Moreland was once sales manager of the water heater department of Hotpoint, Inc.

HOLBROOK HEADS NPA CONSUMER DURABLE GOODS DIVISION

Harry J. Holbrook, recently appointed director of the Consumer Durable Goods Division of NPA, went to his Washington post on leave of absence from the Norge Division of Borg-Warner Corp., according to H. L. Clary, Norge vice president in charge of sales.

Holbrook had been sales manager of Norge's electric range and water heater section since 1945. During World War II, he served as a branch executive of the War Production Board. He first joined Borg-Warner in 1937 as regional manager of the firm's Detroit Vapor Stove Division.

He is a former chairman of the water heater section, and currently

HARRY HOLBROOK

vice chairman of the electric range section of the National Electrical Manufacturers Association. He is also chairman of the electric range section of the Institute of Cooking and Heating Appliance Manufacturers.

KITCHEN CABINET MFRS. MEET, APPOINT STEERING COMMITTEE

Following the largest meeting on record of steel kitchen cabinet manufacturers in February, this group held an even larger meeting in Cleveland, Ohio, June 6. Present were 32 persons, 29 of whom were executives from 19 kitchen cabinet manufacturers—an increase of over 25% in the number of plants represented at the February meeting, and included an estimated 95% of the industry's production. M. M. Miller, president, Miller Metal Products, Inc., Baltimore, served as meeting chairman.

A report was made that 20 steel kitchen cabinet manufacturers and several suppliers of materials are now cooperating in an industry program.

Reports since the last meeting indicated that considerable help had been brought to the cooperating group. The industry's position and assistance to the mobilization program were carefully gone into. The provisions of governmental orders, including CMP, OPS regulations, and many related subjects received thorough attention.

Miller stated "This group in our industry, it has now been clearly demonstrated, needs continuity and direction. The direction need not necessarily follow the activities of the old Institute. To assure continuity, businesslike handling requires the adoption of a budget and the development of a program. The assurance given by an overwhelming majority at the meeting to provide funds to assure operations, until the Steering Committee can report, is an outstanding indication of the keen interest among manufacturers."

Chairman Miller emphasized that by reasons of extremely high interest on the part of a very large percentage of industry production mentioned above, a Steering Committee of 10 would be designated with 5 Committee members comprising the Institute's board of governors. This action was approved, and the Committee now at work constitutes the following:

E. E. Brey, ass't to pres., Acme Metal Products Corp.; F. F. Duggin, gen. mgr. of sales, Avco's American Central Div.; Chas. E. Howes, sales mgr., Steel Equip. Div., Berger Mfg. Div. of Republic Steel; Harry Lawrence, sales mgr. Hubeny Brothers, Inc.; Harvey G. Knuth, mgr. kitchen cab. dept., Lyon Metal Products, Inc.

M. M. Miller, pres., Miller Metal Products, Inc.; C. S. Motter, vice pres., Morton Mfg. Co.; Chas. A. Morrow, vice pres., Mullins Mfg. Corp.; J. Lewis Palley, pres., Palley Mfg. Co.; and R. A. MacNeille, pres., St. Charles Mfg. Co.